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DEVESCOVINID FLAGELLATES OF TERMITES

I. THE GENUS DEVESCOVINA

BY

HAROLD KIRBY

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TRANSACTIONS

OF THE

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VOLUME LXXII

ONE NEW GENUS AND SIX NEW SPECIES OF CENTRAL AMERICAN AND COLOMBIAN PSEUDOPHYLLINAE (ORTHOPTERA: TETTIGONIIDAE)

BY JAMES A. G. REHN

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(Plates I, II and 16 text-figures)

Early in 1945 Major Woodrow W. Middlekauff, Sanitary Corps, A.U.S., then stationed in Panama, sent to me specimens of three species of pseudophyllid katydids, which he had taken at El Valle de Anton, Panama.[1] Two of these represented new species of the rather well-known genus *Bliastes*, and the third was of an unrecognized new genus. The identification of these species of *Bliastes* required the examination of all available material belonging to the *atrifrons* group of the genus, which entailed the addition of another previously unrecognized new species from Colombia, and placed before me representatives of all of the species of the group now known. In consequence I am able to review all of these forms, and am here presenting a key for their discrimination.

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[1] El Valle de Anton is in the northeastern corner of the Province of Cocle. A description of the locality will be found in the prefatory section of a paper by Dr. E. R. Dunn, on amphibians and reptiles secured by him at that interesting spot (see Occ. Papers Boston Soc. Nat. Hist., VIII, pp. 65-67, (1933)). Its position is given by Dunn as 8° 36′ N., 80° 7′ W., and its air-line distance from Barro Colorado Island as approximately forty miles to the south-southwest. The valley is said to be "a practically flat swampy plain, roughly oval in shape, and two miles in diameter, and apparently entirely surrounded by mountains."

With the descriptions of these new species, brought to light by Major Middlekauff's efforts, I am also presenting those of two new species of the genus *Goethalsiella*, collected by me in Costa Rica and recognized as undescribed a number of years past.

All of the types are in the collection of the Academy of Natural Sciences of Philadelphia, which institution is deeply indebted to Major Middlekauff for his interest and cooperation.

The Species of the Atrifrons Group of the Genus Bliastes

In 1895 Brunner von Wattenwyl described *Bliastes atrifrons*,[2] basing it on a female from Chiriquí, in the present Republic of Panama. Saussure and Pictet in 1898 amplified the information on this species by figuring the male subgenital plate, and supplying characters and measurements of both sexes, as well as elaborating the original locality to the Volcán de Chiriquí.[3] In 1927 my colleague Mr. Morgan Hebard recorded a single male from Andagoya, Antioquia, Colombia, as *atrifrons*,[4] but stated it was larger than the measurements of that species previously given, and also had certain differences in the femoral spination, concluding that "material from Panama may show the present insect to be very closely related but a distinct species." In the representation sent me by Major Middlekauff are two male specimens of *Bliastes* which represent species closely related to *atrifrons*, but both definitely distinct from the Antioquia individual reported by Hebard. Fortunately there reached Philadelphia in quite recent years an interesting and important collection of Orthoptera made by Dr. D. W. Bishop, while a member of an Academy expedition to the Province of Chiriquí, Panama, and this contains a series of true *atrifrons*, representing both sexes. As the result of a comparison of this series with the other components of this species-group now before me, it is evident that at least four species are represented, of which three are new to science. To facilitate the recognition of these species I have prepared the following key to these forms, all of which would fall under Brunner's key couplet for *atrifrons*.[5]

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[2] Monogr. der Pseudophyll., pp. 182, 190.

[3] Biol. Cent.-Amer., Orth., II, p. 429, pl. XX, fig. 24.

[4] Trans. Amer. Entom. Soc., LII, p. 316.

[5] Monogr. der Pseudophyll., p. 182, (1895).

Key to the Species of the Atrifrons Group of the Genus Bliastes

1. Mandibles of the male with the proximal portion of their cephalic stiffening ridge definitely swollen and inflated, the expansion of this area greatly restricting the longitudinal fluting of the external (lateral) surface of the mandibles. Infra-ocular impression of the head very weakly indicated and poorly defined. (Head relatively broad as seen in cephalic aspect. Cerci of male robust, weakly incurved, with apex mucronate. Size moderately large.) Panama. **molaris** new species

Mandibles of the male with the proximal portion of their cephalic stiffening ridge not definitely swollen or inflated, the longitudinal fluting of the external (lateral) surface of the mandibles not at all interrupted or circumscribed. Infra-ocular impression of the head more distinctly indicated and more sharply delimited caudad......2

2. Size moderately large. Pronotum broader, more quadrate as seen from dorsum. Cerci of male with shaft definitely in-bent or hooked a short distance proximad of the apex, the latter somewhat incrassate and subbulbous on dorsal surface. Median ocellar spot large. Distal palpal article quite long, equal to one and three-fourths times the length of antepenultimate article. Panama. **middlekauffi** new species

Size medium to small. Pronotum more longitudinal, somewhat compressed as seen from dorsum. Cerci of male with shaft not at all in-bent or hooked a short distance proximad of the apex, the latter simple and mucronate. Median ocellar spot relatively minute. Distal palpal article of average length, not more than one and one-half times that of antepenultimate article........................3

3. Size medium. Eyes proportionately larger. Premediastine section of marginal field of tegmina with a more complex and denser areolation. Median limbs proportionately more elongate.[6] Subgenital plate of male with slender distal portion more elongate proportionately. Antioquia, Colombia.........**antioquiae** new species

Size small. Eyes proportionately smaller. Premediastine section of marginal field of tegmina with a less complex and less dense areolation. Median limbs proportionately less elongate. Subgenital plate of male with slender distal portion less attenuate proportionately. Chiriquí, Panama....................**atrifrons** Brunner

Bliastes molaris[7] new species

(Text-figs. 1 and 2; pl. I, figs. 17 and 18.)

In size and general appearance this species is very similar to

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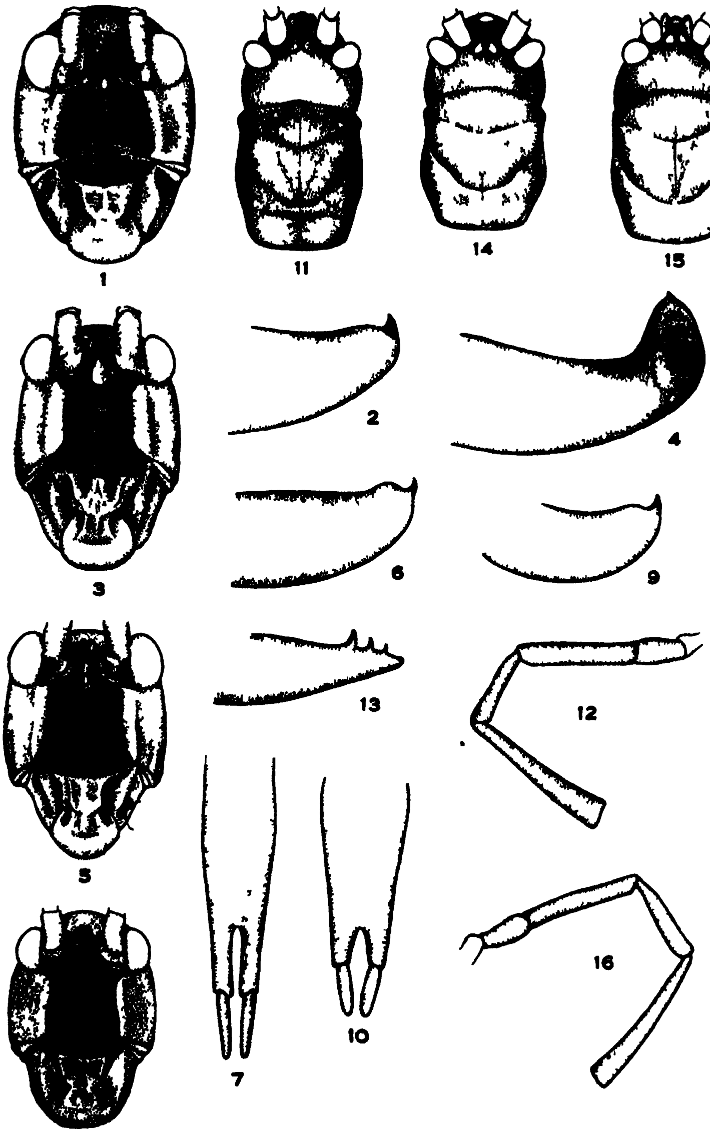
[6] This condition is probably true of the cephalic limbs as well, but the unique specimen of *antioquiae* has had both cephalic limbs regenerated and hence they are of abnormally small size and generalized structure.

[7] In allusion to the cusp-like swelling on the mandibular surface.



Bliastes molaris new species. Male (type). El Valle de Anton, Panama. Cephalic view of head, fig 1 (× 3) Dorsal view of apex of cercus, fig 2 (greatly enlarged)

B. middlekauffi here described, but the characters given as diagnostic in the above key at once will serve to distinguish the two. In addition the head is definitely broader in *molaris* with more inflated genae, the black face maculation is regularly expanding ventrad, instead of narrower and subequal in breadth as in *middlekauffi,* while the median ocellar spot is far smaller than in the latter species. The pronotum in *molaris* is slightly more strangulate than in *middlekauffi,* with the caudal margin of the disk more broadly rounded and less truncate mesad, while the cephalic and median limbs are shorter and, particularly the cephalic, appreciably stouter. The styles of the male subgenital plate are also more slender in *molaris* than in *middlekauffi.*

Type.—♂; El Valle de Anton, Cocle Province, Panama. Elevation, 2600 feet. April 1, 1945. (Woodrow W. Middlekauff; "behind leaf bracts of banana stalks.") [Academy of Natural Sciences of Philadelphia, Type no. 5716.]

Size moderately large (body, 36 mm.); general form and sculpture as usual in the genus.

Head relatively broad and thick, as seen in cephalic aspect its greatest breadth across genae is somewhat greater than two-thirds of the depth of the entire head (as 6.5 to 9), that across eyes appreciably less than that across genae (as 5.6 to 6.5); occiput well rounded as seen in cephalic and

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Bliastes middlekauffi new species. Male (type). El Valle de Anton, Panama. Cephalic view of head, fig. 3 (× 3). Dorsal view of apex of cercus, fig. 4 (greatly enlarged).

Bliastes antioquiae new species. Male (type). Andagoya, Antioquia, Colombia. Cephalic view of head, fig. 5 (× 3). Dorsal view of apex of cercus, fig. 6 (greatly enlarged). Ventral aspect of subgenital plate, fig. 7 (greatly enlarged).

Bliastes atrifrons Brunner. Male. Volcán de Chiriquí, Panama. Cephalic view of head, fig. 8 (× 3). Dorsal view of apex of cercus, fig. 9 (greatly enlarged). Ventral aspect of subgenital plate, fig. 10 (greatly enlarged).

Goethalsiella genicularis new species. Male (type). La Emilia, Costa Rica. Dorsal view of head and pronotum, fig. 11 (× 3½). Palpus, fig. 12 (greatly enlarged). Dorsal view of cercus, fig. 13 (greatly enlarged). Female (allotype). Same locality. Dorsal view of head and pronotum, fig. 14 (× 3½).

Goethalsiella grandis new species. Female (type). Suretka Trail, Costa Rica. Dorsal view of head and pronotum, fig. 15 (× 3½). Palpus, fig. 16 (greatly enlarged).

lateral aspects; fastigium cephalad reaching to but not surpassing the internal lamellate rim of the antennal scrobes, moderately compressed, acute trigonal as seen from dorsum, apex narrowly rounded, dorsal surface with its inflated ocelligerous proximal half sulcate medio-longitudinally, distal half of this surface shallowly sulcate; facial fastigium with the median ocellus relatively small; infra-ocular portion of genae but faintly excavate ventrad, bordered cephalad by blunt, broadly rounded lateral facial carinations, which as viewed in cephalic aspect moderately diverge ventrad; mandibles having their cephalic stiffening ridge broadly inflated proximad, this bullation cut off from the immediate base by a distinct concave area, while caudo-laterad the inflation is expanded so that it largely fills the usually deplanate or concave external face of the mandibles, the bullation becoming obsolete at about the point where the lateral margins of the labrum normally lay over the closed mandibles; palpi moderately elongate, distal article which is appreciably clavate distad, 1.5 times as long as the antepenultimate one. Eyes rather prominent, but rotundity slightly flattened laterad, in basal outline the cephalic side is slightly flattened.

Pronotum as seen from dorsum moderately but not strongly strangulate, the breadth mesad slightly but distinctly less than that at cephalic margin, surface of disk and sections of lateral lobes with numerous low rounded papillae, greatest median length slightly more than greatest breadth across lateral lobes caudad (as 6.5 to 6); cephalic margin of disk broadly and moderately arcuate, caudal margin of same strongly arcuate with a slight mesal flattening; prozonal section of disk nearly twice as long as that of the metazona; transverse sulci well impressed, the principal (caudal) one more deeply so, no trace of a median carina present; lateral lobes moderately longitudinal, subrectangulate in general outline, length nearly 1.5 times the greatest caudal depth of the pronotum, cephalic and caudal margins subparallel, virtually straight, ventral margin weakly sigmoid, ventro-cephalic angle well rounded, ventro-caudal section of margin narrowly rounded rectangulate, principal sulcus deeply impressed, obliquely and sigmoidally bisecting the surface of the lobes.

Tegmina surpassing the apices of the caudal femora by a distance slightly greater than the combined length of the head and pronotum, of the type characteristic of *Bliastes*, greatest breadth mesad contained 5.6 times in the tegminal length; costal and sutural margins in most of their length nearly straight, subparallel, apex well rounded; marginal field at widest point (i.e. proximal seventh) faintly broader than half greatest breadth of tegmen; mediastine vein short, oblique and distinct, marginal field with oblique sectors distad relatively regular in spacing, oblique, median vein diverging at distal third of tegminal length, cross-veins of discoidal field rather regularly spaced, sometimes oblique, occasionally paired; stridulating vein slightly shorter than the prozona of the pronotal disk, free margin of stridulating field strongly arcuato-lobate about the distal extremity of the stridulating vein, tympanum ovoid in outline, its base subtruncate, its distal extremity rounded. Wings reaching to the apices of the tegmina.

Paired prosternal spines quite short; mesosternum in outline subquadrate, lateral margins rounded obtuse-angulate, cruciform pattern of surface well impressed, caudal foveolar impression deep, transverse; metasternum in general outline trigonal, narrowing caudad, lateral margins arcuate, lateral areas moderately elevated, caudad converging surface impressions well marked, foveolar pit subquadrate in outline.

Ultimate abdominal tergite transverse as seen from dorsum, its distal margin with lateral sections obliquely converging meso-distad, its median portion shallowly concave, this associated with a transverse surface concavity of the distal half of the surface limited to the same breadth; supra-anal plate trigonal in outline, proximad slightly broader than long, its surface medio-longitudinally sulcate distad; cerci stout, short, in length subequal to the ultimate tergite, slightly inbowed, apex with a very short and stout, subdepressed uncinate tooth; subgenital plate moderately attenuate distad, median emargination of distal margin deep and narrow, styles more slender than in *B. middlekauffi* here described.

Cephalic femora 1.5 times as long as pronotal disk, as seen from dorsum definitely arcuate, ventro-cephalic margin with a single spine at distal fifth, ventro-caudal margin unspined; cephalic tibiae moderately robust, slightly longer than the femora, with plane of dorsal surface appreciably canted laterad, dorsal margins unarmed, ventral margins well spined. Median femora very slightly longer than the cephalic, as seen from dorsum slightly but much less markedly arcuate, ventro-cephalic margin with two spines in distal third, ventro-caudal margin unspined; median tibiae slightly longer than femora, subcompressed, dorsal surface moderately sulcate, dorsal margins unspined, ventral margins each with seven spines. Caudal femora longer than in *middlekauffi*, their greatest depth not quite equal to one-fifth of their length, ventro-external margin distad with 4 or 5 spines, genicular lobes with brief distal spines; caudal tibiae slightly longer than the femora, all margins well spined.

Coloration.—General base tone ochraceous-buff, areally darkening to ochraceous-tawny or buckthorn brown. Face, dorsal surface of occiput, fastigia and internal section of antennal scrobes, proximal half of clypeus and cephalic section of mandibles black, of the face, clypeus and mandibles polished, of occiput dull and matt; eyes dresden brown; ocellar spots yellow; antennae with two proximal articles largely liver brown, remainder ferruginous passing to tawny distad. Pronotal dorsum washed with hazel, lateral lobes pale cephalad, touched with hazel caudad. Tegmina with discoidal field somewhat darkening toward sutural margin, transverse nervures often emphasized by bordering clouds of cinnamon-brown to prout's brown, as usual in the genus; stridulating area with tympanum solidly prout's brown; marginal field proximad pale greenish yellow against a prout's brown background. Cephalic and median femora becoming hazel distad, cephalic tibiae solidly of the same tone, spines of all limbs dark tipped.

Measurements.—Length of body, 36 mm.; length of pronotum, 7; length of tegmen, 37.5; length of caudal femur, 21.

The type of this species is unique.

Bliastes middlekauffi[8] new species

(Text-figs. 3 and 4; pl. I, figs. 19 and 20.)

The preceding key and the comparative diagnosis of *B. molaris* give the more salient features separating these two species. In size *middlekauffi* is definitely larger than either *B. antioquiae* or *atrifrons*, and from both of those species it is at once distinguished by its relatively broader tegmina, the very distinctive form of the apices of the male cerci and its much larger median ocellar spot.

Type.—♂; El Valle de Anton, Cocle Province, Panama. Elevation, 2600 feet. April 1, 1945. (Woodrow W. Middlekauff; "behind leaf bracts of banana stalks.") [Academy of Natural Sciences of Philadelphia, Type no. 5717.]

Size moderately large (body 38 mm.), similar to that of *B. molaris;* general form somewhat more attenuate and with narrower head than in *B. molaris;* surface sculpture in general quite similar to that of *molaris.*

Head appreciably narrower than that of *molaris*, as seen in cephalic aspect its greatest breadth across genae is exactly two-thirds of the depth of the entire head (as 6 to 9), that across eyes but slightly less than that across genae (as 5.6 to 6); occiput slightly less strongly rounded than in *molaris;* fastigium cephalad not quite reaching to the internal lamellate rim of the antennal scrobes, as seen from dorsum slightly less strongly acute and less compressed than in *molaris*, but the immediate apex is sharper and the dorsal sulcation of that area is stronger distad, while the ocelligerous proximal portion is even more strongly elevated than in *molaris*, but similarly sulcate, paired ocelli as in *molaris;* facial fastigium with the median ocellus large, with at least twice the area of that of *molaris* and occupying almost the entire ventral portion of that fastigium; infra-ocular portion of genae much more definitely excavate, this more pronounced ventrad but as a whole evident from the ventral border of the eyes to the mandibular articulations, bordered meso-cephalad by well-marked infra-scrobal ridges, these moderately diverging ventrad as seen in cephalic aspect, while a parallel sculptured shoulder defines their border caudad; mandibles of the type usual in the subfamily and lacking entirely the specialized development found in *molaris;* palpi much more elongate and attenuate than in *molaris*, each article sharing in this, distal article slightly more than 1.5 times as long as the antepenultimate one, its greater attenuation than in *molaris* due to an increased relative proportion of the very slender proximal section rather than a general proportionate elongation. Eyes in basal outline not quite as broad as in *molaris*, as seen from dorsum slightly more prominent. Antennae as usual in the genus.

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[8] In honor of its collector, Major Woodrow W. Middlekauff, Sanitary Corps, A.U.S.

Pronotum somewhat less strangulate than in *molaris*, the breadth mesad being but faintly less than that at cephalic margin, sculpture of surface of disk and lateral lobes as in *molaris*, greatest median length but slightly greater than greatest breadth caudad across lateral lobes (as 6.9 to 6.5); cephalic margin broadly and moderately arcuate, caudal margin of disk more broadly and definitely arcuato-subtruncate than in *molaris;* relative proportions of the elements of the disk surface as in *molaris;* principal transverse sulcus more deeply but less widely impressed than in *molaris;* lateral lobes as described under *molaris* except that the principal sulcus while oblique is straighter and hardly sigmoid.

Tegmina in shape and proportions as in *molaris* but in size slightly larger; breadth of fields and venational features as in *molaris* except that the cross-veins of the discoidal field are more numerous and more regular in disposition, the enclosed areas more generally quadrate or subquadrate and the veins rarely paired; stridulating field as in *molaris*. Wings reaching to tegminal apices.

Paired prosternal spines of medium length, distinctly longer than those of *B. molaris;* mesosternum in outline slightly more transverse than in *molaris*, lateral margins as in latter, cruciform pattern more deeply impressed; metasternum as in *molaris*.

Ultimate abdominal tergite somewhat compressed artificially in the unique type, basic form very probably as in *molaris;* supra-anal plate as in *molaris;* cerci stout, slightly longer than in *molaris*, the shaft similar, gradually tapering and somewhat inbowed, apices slightly thickened, bulbous and moderately in-bent, with a minute blunt tooth, which while directed mesad is but faintly uncinate; subgenital plate of similar length to that of *molaris* but less attenuate, median emargination as in *molaris* but slightly broader, styles moderately robust, slightly longer than the median emargination is deep.

All limbs somewhat longer than in *B. molaris* but proportionately more slender, particularly the cephalic and median pairs. Cephalic femora 1.6 times as long as pronotal disk, as seen from dorsum appreciably less arcuate than in *molaris* but with some tendency in that respect in proximal half, ventro-cephalic margin in distal third with one well developed spine and a rudiment of another; cephalic tibiae similar to but appreciably more slender than those of *molaris*. Median femora proportionately as long as in *molaris* but more slender, ventro-cephalic margin with three spines in distal two-fifths; median tibiae except for the more slender character as in *molaris*. Caudal femora slightly less than two-thirds as long as the tegmina, their greatest depth contained 5.5 times in their length, ventro-external margin distad with six or seven spines, genicular lobes with spines somewhat longer than in *molaris;* caudal tibiae as in *molaris*.

Coloration.—As in *B. molaris* with the following differences; darkening of the dorsum russet and extending caudad over much of the sutural section of the tegmina; black face marking somewhat narrower than in *molaris* and involving no part of the mandibles but as marked on the proximal portion of the clypeus, apices of the cerci and styles of the subgenital plate blackish, tegmina and limbs, except as noted here, colored as in *B. molaris*.

Measurements.—Length of body, 38 mm.; length of pronotum, 7; length of tegmen, 40; length of caudal femur, 25.5.

This species is known only from the unique type.

Bliastes antioquiae new species (Text-figs. 5, 6 and 7.)

1927. *Bliastes atrifrons* Hebard, Trans. Amer. Entom. Soc., LII, p. 316. (Not of Brunner, 1895.) [♂; Andagoya, Antioquia, Colombia.]

This species is intermediate in size between *B. molaris* and *middlekauffi* on one hand, and *B. atrifrons* on the other, differing from each of these in a number of details, some of which are given in the preceding key to the species of the *atrifrons*-group. Affinity with *atrifrons* is closer than with *middlekauffi*, there being agreement in the general tegminal proportions and the type of development of the apex of the male cercus, but in addition to the differential features already given the eyes are proportionately larger in *antioquiae* than in *atrifrons*, the caudal femora are somewhat more robust proximad, the marginal field of the tegmina has fewer oblique cross-veins in the distal section, and the distal portion of the male subgenital plate is more compressed and more deeply fissate.

Type.—♂; Andagoya, Department of Antioquia, Colombia. April 24, 1918. (M. A. Carriker, Jr.) [Academy of Natural Sciences of Philadelphia, ex Hebard Collection, Type no. 1369.]

Size medium (body 39 mm.); general form and sculpture as usual in the genus.

Head relatively short and broad, as seen in cephalic aspect its greatest breadth across genae being nearly equal to three-fourths of the depth of the entire head (as 5.75 to 8), that across eyes but slightly less than that across genae (as 5.4 to 5.75); occiput well rounded; fastigium cephalad not quite reaching as far as the internal lamellate rim of the antennal scrobes, moderately compressed, acute trigonal as seen from dorsum, the distal portion of its dorsal surface finely sulcate medio-longitudinally, proximal portion, as usual in the genus, compressed and elevated and deeply sulcate; facial fastigium with the median ocellus quite small; infra-ocular portion of genae with its surface broadly channelled as in *B. middlekauffi*, the caudal border of the same area clearly marked ventro-caudad by a distinct, similarly oblique carina, which is as pronounced as that forming the cephalic border of the area, these latter slightly diverging ventrad as seen in cephalic aspect;

mandibles essentially as described for *B. middlekauffi,* with no indication of the structural peculiarity seen in *B. molaris;* palpi moderately elongate, distal article 1.5 times as long as antepenultimate one. Eyes moderately prominent, in basal outline proportionately as large as in *B. middlekauffi,* and definitely larger than in *atrifrons.* Antennae as usual in the genus.

Pronotum with its general outline, degree of strangulation and general proportions as in *B. molaris,* sculpture of disk and of sections of the lateral lobes as in latter; cephalic margin of disk broadly arcuate as in *molaris* and *middlekauffi,* caudal margin of disk broad and low arcuate, less flattened mesad than in the above mentioned species; proportions of the prozona and metazona and the degree of impression of the two transverse sulci as in *molaris,* vestigial and isolated indications of a median carina present caudad on the prozona and on the metazona; lateral lobes essentially as in *B. molaris.*

Tegmina surpassing the apices of the caudal femora by a distance subequal to two-thirds the length of the pronotal disk, of the general type characteristic of *Bliastes,* greatest breadth mesad contained five times in the tegminal length; margins and apex in outline as in the related forms here described; marginal field at widest point (proximal seventh) appreciably broader than half greatest breadth of tegmen, and with fewer oblique cross-veins distad than in *molaris* or *middlekauffi;* median vein diverging at distal fourth of the tegminal length, cross-veins of discoidal field quite regularly spaced and as a whole more uniformly oriented than in *B. molaris* or *middlekauffi,* in consequence a larger percentage of the interspaces are regularly quadrate or rectangular, the cross-veins less frequently paired; stridulating field in general form and character as in *middlekauffi,* but the tympanal outline is slightly more acute distad. Wings reaching to the tegminal apices, subcycloid in outline, the greatest breadth contained 1.3 times in the length, apex rounded rectangulate.

Paired prosternal spines shorter than in *B. middlekauffi* but longer than in *molaris,* relatively stout but sharply acuminate; meso-metasternal areas essentially as in *B. molaris.*

Ultimate abdominal tergite of the type found in *molaris* and *middlekauffi,* subcompressed during preparation in the unique type; supra-anal plate distorted by extraneous compression of the ultimate abdominal tergite but clearly of the general type found in both *molaris* and *middlekauffi;* cerci as in *molaris* except that the apical uncinate tooth is somewhat smaller and less strongly hooked; subgenital plate with deplanate ventral surface narrower and more compressed than in either *molaris* or *middlekauffi,* distal emargination proportionately narrower and slightly deeper than the styles are long, the latter more slender and straighter than in *middlekauffi.*

Cephalic limbs in the unique type malformed, apparently by preimaginal injury. Median femora almost 1.7 times as long as the pronotal disk (as 10.5 to 6.25), their relative bulk essentially as in *B. molaris* and slightly more robust than in *middlekauffi,* ventro-cephalic margin with two spines in distal third, ventro-caudal margin unspined; median tibiae of the same relative length and build and with the spine formula of *molaris.* Caudal femora approximately two-thirds as long as the tegmina, the build and proportions as in *molaris,* stouter proportionately than in *atrifrons,* ventro-external margin distad with six spines, spines of genicular lobes in length between those of *molaris* and *middlekauffi;* caudal tibiae as in related species.

Coloration.—As already described for *B. molaris* with the following exceptions: occiput infumate with prout's brown instead of black, face markings with proportions and extent as in *molaris,* but mandibles vinaceous-rufous and not at all black, antennae ferruginous with proximal article paling to cinnamon-buff, lateral lobes of pronotum entirely pale, stridulating field of the general tegminal color, marginal field of tegmina with prout's brown limited to areolet infuscation and the bordering of cross-veins, styles pale.

Measurements.—Length of body, 39 mm.; length of pronotum, 7; length of tegmen, 34; length of caudal femur, 22.

The type is unique.

Bliastes atrifrons Brunner (Text-figs. 8, 9 and 10; pl. I, figs. 21 and 22.)

1895. *Bliastes atrifrons* Brunner, Monogr. der Pseudophyll., pp. 182, 190. [♀; Chiriquí [Panama].]

1898. *Bliastes atrifrons* Saussure and Pictet, Biol. Cent.-Amer., Orth., I, pp. 428, 429, pl. XX, fig. 24. [♂, ♀; Volcán de Chiriquí, Panama.]

PANAMA: Río Colorado, El Volcán, Chiriquí Province, elevation 4300 feet; VI, 5–9, 1937; (D. W. Bishop); 1 ♂; [A.N.S.P.] Río Santa Clara, El Volcán, Chiriquí Province, elevation 4100 feet; VI, 15–30, 1937; (D. W. Bishop); 11 ♂, 2 ♀; [A.N.S.P.].

The possession of this important series of topotypic material of *atrifrons* has enabled me to interpret the related new species here described. It also furnishes us an index to the extent of individual variation in certain features which may be found in a series of a species of *Bliastes.* An analysis supplies the following variational data: no more than a single spine is present on the ventro-cephalic margin of the cephalic femora, while one specimen has this on one femur completely unspined; the ventro-cephalic margin of the median femora has the distal spine series usually numbering two, occasionally three (on both limbs in two specimens and on one limb in three others), rarely as few as one (on a single limb); ventro-cephalic margin of caudal femora with number in spine series ranging from four to seven, the former on but a single margin in four specimens (the opposite one with six in two cases), and the latter on but a single margin in another, the average number of spines being five.

The series shows the following extremes in size range (in millimeters):

	Length of body[9]	Length of pronotum	Length of tegmen	Length of cephalic femur	Length of caudal femur	Length of ovipositor
♂, Río Colorado	29.7	5.3	25	8.1	16.6	—
♂, Río Santa Clara	33	6.1	29.5	9.4	19.3	—
♀, Río Santa Clara	29.5	6.3	28	8.8	18.6	16.8
♀, Río Santa Clara	34	6.5	29	9.3	20.2	16.8

The one feature in Brunner's original description which does not coincide with the present material is his statement that the subgenital plate of the female is not emarginate at the apex. In both of the females before me this area is definitely but not broadly emarginate.

Two New Species of Goethalsiella from Costa Rica

Goethalsiella genicularis new species

(Text-figs. 11, 12, 13 and 14; pl. II, figs. 25 and 26.)

Compared with the description of *G. tridens* Hebard, the genotype, from Barro Colorado Island, Panama,[10] this striking species differs chiefly in the lateral lobes of the pronotum having their caudal margin obliquely subtruncate without a definite humeral sinus, as is found in *tridens*, in the tegmina being greatly reduced in both sexes, and in length but slightly exceeding that of the pronotum, instead of reaching to the abdominal apex as in *tridens*, in both genicular lobes of the cephalic femora being briefly spined, instead of unarmed as in *tridens*, and in the cercus of the male being straighter than in *tridens* and as a whole more evenly tapering distad.

Type.—♂; La Emilia, near Guápiles, Santa Clara District, Limón Province, Costa Rica.[11] Elevation, 1000 feet. August 22, 1923. (J. A. G. Rehn; from new rolled leaf of a low broad-leafed plant in forest undergrowth.) [Academy of Natural Sciences of Philadelphia, Type no. 5719.]

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[9] In the male to the apex of the subgenital plate, in the female to the lateral base of the ovipositor.

[10] Trans. Amer. Entom. Soc., LIII, p. 129, pl. XX, fig. 12 [♂], (1927).

[11] For an account of the general conditions at the type locality see pages 26 and 27, of the author's article, "An Entomologist's Summer Visit to Jamaica and Costa Rica," in the 1923 Yearbook of the Academy of Natural Sciences of Philadelphia, pp. 17 to 34.

Size medium (body length, 38 mm.), brevialate; surface moderately polished except of the tegmina.

Head not definitely inflated as seen from dorsum or in cephalic aspect, greatest breadth across genae in latter view equal to approximately two-thirds the depth of the entire head (as 4.5 to 6.5), that across eyes equal to the genal breadth; occiput in lateral profile arcuately declivent to the fastigium, which is relatively low, and while sharply acute lanceolate in its outline distad (as seen from dorsum) its juxta-antennal borders are much broader acute-angulate, dorsal surface with a shallow medio-longitudinal sulcus, paired ocelli large, subreniform in outline, in position somewhat rotated dorso-mesad, little elevated and but narrowly separated, median ocellus very large, over 1.5 times as long and wider than one of the paired ones, little elevated; face with its surface subdeplanate in a triangular area between the median ocellus and the clypeus, the low lateral borders of this area in no way carinate but moderately marked, diverging ventrad toward the lateral bases of the clypeus; palpi moderately elongate, ultimate article 1.25 times as long as antepenultimate one. Eyes moderately prominent, reniform-ovate in basal outline. Antennae appreciably surpassing the body in length, apices damaged in type.

Pronotum sellate in general outline, although but faintly concave near the principal sulcus when seen in profile, as seen from dorsum the greatest breadth across lateral lobes is but slightly less than median pronotal length (as 5 to 5.3), which latter is faintly greater than twice the dorsal length of the head; cephalic margin of disk arcuate with a very faint and blunt median angulate tendency, caudal margin of disk as a whole subtruncate rounding laterad to the lateral lobes; prozona on median line slightly more than twice as long as the metazona, principal sulcus deeply impressed and laterad extending obliquely ventro-caudad over the lateral lobes, first transverse sulcus less impressed than principal one, sinuately crossing the prozona slightly cephalad of its middle; general surface of dorsum, and to an extent of lateral lobes as well, shallowly and smoothly cicatricose: lateral lobes with their greatest depth contained 1.66 times in their dorsal length (as 3.3 to 5.5), principal sulcus very deeply and obliquely impressed, cephalic margin straight oblique, subvertical, ventro-cephalic angle rectangulate, ventral margin broadly arcuate, extending continuously over the caudal margin of the lobes to the junction with the caudal margin of the disk, no humeral sinus nor any ventro-caudal angle indicated, all margins, as well as those of the disk, distinctly cingulate.

Tegmina coriaceous, subequal to the combined length of the head and pronotum, reaching almost to the distal margin of the second abdominal tergite, elliptically ovate in general outline except for the somewhat more ample sutural section of the stridulating field, its greatest breadth (taken at the distal end of the stridulating field) contained approximately 2.1 times in the tegminal length; costal margin broadly and strongly arcuate, apex broad and well rounded, distal section of sutural margin nearly straight, evenly rounded to apex, stridulating section of sutural margin broadly arcuate, evenly rounding proximad to the transverse, nearly straight basal border of that field; marginal field at broadest point equal to about two-fifths of entire tegminal breadth at apex of stridulating field, mediastine vein evident for more than half the length of the marginal field, anastomosing supplementary nervures coarse and areolets relatively large, the two elements of the humeral trunk well and continuously separated, irregular cross-veinlets in the intervening space, median vein diverging at distal third; stridulating field of the left tegmen densely yet coarsely covered with raised anastomosing veinlets of irregular disposition, the stridulating and axillary veins being the only ones clearly recognizable in the surface network. Wings completely concealed beneath the tegmina.

Prosternal paired spines short, low conical; mesosternum strongly transverse, its lateral sections obliquely elevated, sublamellate, the lateral margins arcuate, obliquely truncate caudad, foveolar fossa strongly transverse and low trigonal in outline; metasternum transverse, breadth 1.5 times the median length, cephalic margin virtually transverse truncate, most of lateral borders and caudal margin broadly and continuously arcuate with a slight medio-caudal angulation, lateral sections slightly elevated, foveolar fossa a single pit, slightly transverse, its caudal outline with the same curvature as the caudal margin of the metasternum, from which it is separated solely by the bordering wall.

Abdomen smooth, subcylindrical, non-carinate; second tergite meso-caudad with a raised, apparently glandular structure, the distal margin of the tergite there obtuse-angulately emarginate, thickened and elevated to this unusual structural feature,[12] which in the resting condition of the insect is flanked on each side by the arcuate disto-sutural portion of the tegminal margins; distal margin of other tergites transverse truncate or subtruncate, except of the ultimate one, which latter has its distal margin rather broadly low arcuate produced mesad,[13] a median low rounded cariniform ridge present on distal half of the tergites surface, this relieved on each side and proximad by an impressed area of reversed trigonal outline; supra-anal plate little evident, crowded beneath the ultimate tergite but bearing a median straight and pronounced spiniform production; cerci styliform, regularly tapering distad, rather stout proximad, where the surface is granulose, as seen from dorsum straight, in profile slightly decurving in distal third, apex blunt acute, internal face of distal third with three recurved teeth, of which the proximal is the largest; subgenital plate with disto-lateral portions of margin concavely produced distad into the marked paired styligerous processes, between which mesad the margin of the plate is deeply and semi-elliptically emarginate, the depth of this equal to three-fourths the length of the simple styles, distal extremities of the styligerous processes slightly enlarged and cupped, ventral surface of plate with the raised continuations of the processes evident to its base.

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[12] The phaneropterine genus *Arethaea* has a somewhat similar and perhaps homologous structure, and both may be the same as Hancock's organ in the Gryllidae.

[13] There is some distortion of this area in the male type, due to buckling of the chitin in preparation and preservation, so the exact shape of this portion of the border in the undamaged condition is problematical. In the type it is subtruncate immediately mesad, but this may not be normal.

Cephalic femora slightly longer than the combined length of the head and pronotum (as 9.5 to 9), moderately slender, straight in profile, slightly arcuate proximad as seen from dorsum, ventro-cephalic margin with two spaced spines in distal third, ventro-caudal margin unspined, both genicular lobes briefly spined; cephalic tibiae faintly longer than the femora (as 10 to 9.5), dorsal surface markedly sulcate longitudinally, dorsal margins unspined, both ventral ones spined but sparingly so proximad. Median femora definitely more slender than cephalic and slightly longer (as 10.5 to 9.5), very faintly arcuate in profile and as seen from dorsum, ventral margins unspined, cephalic (external) genicular lobe very weakly spinigerous, caudal (internal) genicular lobe markedly spined; median tibiae appreciably longer than the femora (as 12 to 10.5), sulcate dorsad, dorsal margins unspined, both ventral margins spined for two-thirds of their length. Caudal femora in length slightly surpassing the apex of the abdomen, moderately slender, greatest depth—at proximal fourth—contained 6.75 times in the femoral length, the least pregenicular depth not more than one-fourth of the greatest depth, ventral margins each with five spines in their distal two-fifths, genicular lobes acutely spined; caudal tibiae nearly a tenth longer than the caudal femora, extensor margins with 18 to 19 spines, flexor margins with 7 to 8 spines, those of the external limited to distal half, of internal spaced over most of entire margin.

Allotype.—♀; same data as type, except date is August 15, 1923, and specimen was found hidden in center of bromeliad on tree at height of eight feet from ground. [Academy of Natural Sciences of Philadelphia.]

Differing from the above description of the male (*type*) in the following noteworthy respects.

Size (body length, 38.5 mm.), general form and proportions much as in male.

Head with width across genae approximately equal to 1.4 times the depth of the entire head (as 5.25 to 7.5), that across eyes very slightly less than genal breadth (as 5 to 5.25). Eyes slightly less prominent than in male. Antennae more nearly perfect than in male type, the length as preserved (and not quite complete) at least 2.5 times that of the body exclusive of the ovipositor.

Pronotum in profile not at all sellately concave dorsad, the dorsal line straight, as seen from dorsum greatest width across lateral lobes is contained 1.13 times in the pronotal length; cephalic margin of pronotal disk broadly arcuate, in no way angulate mesad; prozona with median length slightly more than 2.5 times as long as metazona (as 4.5 to 1.75); transverse sulci similarly and as deeply impressed as in male; lateral lobes as in male.

Tegmina in general character as in male but somewhat shorter proportionately, not quite equalling in length that of the head and pronotum combined, appreciably failing to reach the distal margin of the second abdominal tergite, ovate in outline, the greatest breadth (mesad) contained 1.6 times in the tegminal length; costal margin more strongly arcuate than the sutural one, which is largely low arcuate, apex broadly rounded; marginal field but faintly broader proportionately than in male, venation of that field and area between elements of the humeral trunk as in male, median vein diverging slightly distad of middle of tegmen, areolation and venation of discoidal and anal fields largely irregular, with little system. Wings reaching to tegminal apices and completely covered by the tegmina.

Sterna as in male, except that a short median portion of the caudal section of the metasternum is transversely truncate.

Second abdominal tergite with no dorsal presumably glandular structure, the distal margin shallowly concave mesad; ultimate tergite with distal margin very low arcuate, its surface medio-longitudinally impressed: supra-anal plate blunt trigonal, medio-longitudinally sulcate;[14] cerci simple, styliform, tapering, apically slender and acute; ovipositor valves elongate, relatively robust, in length equal to two-thirds that of the body, compressed, ensiform, dorsal line in profile straight, ventral line straight in proximal half, distad evenly arcuate to the acute apex; greatest depth contained 9.2 times in the ovipositor length, margins entire: subgenital plate trigonal, compressed, naviculiform, apex narrowly and shallowly emarginate.

Cephalic and median limbs as described for male. Caudal femora slightly deeper than in male, greatest depth contained 6.47 times in the femoral length.

Coloration.—Base color various tones of brown or buff, ranging from light ochraceous-buff on the mandibles, palpi and portions of the cephalic tibiae, as well as certain other limited areas, to zinc orange on much of the caudal femora and dresden brown on the abdomen, the most conspicuous color markings being the black distal extremities of all the femora and their adjacent contrasting pregenicular pale annuli. Head with occiput washed with bister, this sometimes reaching well ventrad over the dorsal section of the genae, clypeus occasionally darker than remainder of mouth-parts; ocelli conspicuously mustard yellow to straw yellow; eyes cinnamon-brown to snuff brown; antennae clay color to tawny, two proximal articles solidly or in greater part black. Pronotum uniform, in tone ranging from buckthorn brown to russet. Tegmina with base tone mummy brown, the elements of the humeral trunk lined with cinnamon-brown, most of the transverse secondary venation pencilled to a greater or lesser degree of completeness with antimony yellow to citron yellow, producing a strikingly contrasted fine pattern. Terminal appendages of male abdomen solidly mummy brown to black, as are those of the female except for a slight paling at the immediate base of the ovipositor. Venter pale, darkening progressively distad on the abdomen. In addition to the solid darkening of the genicular extremities of all the femora, and their immediately adjoining and relieving pale annuli, another usually weaker and incomplete dark annulus is generally indicated proximad of the pale one, and these are well marked on all three femora in all the La Emilia individuals, but less conspicuous in that from the Reventazon Valley, although the latter has the terminal darkening as marked as in the other specimens, the spines on ventral carinae of caudal femora may be wholly or in part blackish; cephalic and median tibiae annulate to a greater or lesser degree of completeness or tonal depth with blackish, these annuli numbering three on the cephalic tibiae (one proximal, one premedian and strongly involving the area between the conchae, and the third postmedian, also with a slight distal margining), three of much less conspicuousness on the median tibiae (one proximal, one approximately median and the other predistal); caudal tibiae multimaculate with blackish, but not as true annuli, the dorsal surface with a number of these spots placed between approximately paired spines of the two extensor margins, with, however, a fairly definite pale preapical section, the flexor surfaces with numerous but fewer usually small black dots with several regularly spaced and extending fully across that surface, spines entirely or in large part blackish; all tarsi with the two more distal articles dark brown and thus appreciably contrasted with the paler basal ones.

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[14] This feature taken from female paratype, this area being invaginated in the type.

Measurements.—♂ (*type*), length of body, 38 mm.; length of pronotum, 6.2; length of tegmen, 8.4; length of caudal femur, 26.5.

♀ (*allotype*), length of body (exclusive of ovipositor), 38.5 mm.; length of pronotum, 7.1; length of tegmen, 8; length of caudal femur, 30.5; length of ovipositor, 24.

In addition to the type and allotype I have before me, from the collection of the Academy, two paratypic females, one taken by me at the type locality September 12, 1927, and the other from the Valley of the Rio Reventazon below Juan Viñas, Costa Rica, at 2800 feet, taken June 25, 1909 by Dr. P. P. Calvert, who presented the specimen to the Academy. At the type locality *genicularis* was an inhabitant of dense virgin tropical forest, where it was found during the day-time hidden in leaves of *Heliconia* or other lush undergrowth or in bromeliads.

Goethalsiella grandis new species (Text-figs. 15 and 16; pl. II, fig. 27.)

Closely related to *G. genicularis*, here described, having the same general appearance and color pattern, with the same degree of tegminal development, the genicular lobes of the cephalic femora similarly but very minutely spined, and the caudal margin of the lateral lobes of the pronotum as a whole oblique and in part but very faintly concave. From *genicularis*, however, this species can be separated at once by its distinctly larger size, by the somewhat narrower and more elongate-ovate outline of the tegmina, which latter also have their apices more narrowly rounded, by the somewhat more rugulose surface of the dorsal and lateral aspects of the pronotum, and by the more attenuate palpi, particularly the distal article. The discovery of the as yet unknown male sex will probably add other features of difference.

Type.—♀; North end of Suretka Trail, along the Duroy River, Estrella Valley, Talamanca District, Limón Province, Costa Rica. Elevation, 100–150 feet. September 9, 1927. (J. A. G. Rehn; from rolled calla-like leaf of ground cover in dense hillside forest.) [Academy of Natural Sciences of Philadelphia, Type no. 5720.]

As this species is quite closely related to the preceding *G. genicularis*, the following description emphasizes in detail solely features which differ from those already given in the description of *genicularis*.

General body proportions definitely greater than in *genicularis* (length of body, 46 mm.); form similar.

Head as in *genicularis*, but fastigium somewhat shorter and less strongly compressed, its median sulcation less deeply incised; all ocelli slightly more bullate and inflated than in *genicularis*, the paired ones slightly larger proportionately; surface of face ventrad of the median ocellus more roundly inflated and less deplanate than in *genicularis*; palpi distinctly more elongate than in *genicularis*, ultimate article slightly more than 1.5 times as long as antepenultimate one. Eyes more prominent than in *genicularis*, slightly narrower and more elliptical in basal outline than in *genicularis*. Antennae approximately four times as long as the body without ovipositor.

Pronotum in general as in *genicularis*, but surface as a whole more rugulose.

Tegmina similar in character of development to those of *G. genicularis*, reaching only to the middle of the second abdominal tergite, but definitely narrower and more elongate-ovate in outline, greatest breadth (mesad) contained twice in the tegminal length; costal margin as a whole as in *genicularis*, more strongly arcuate than the sutural, distal half more oblique and less broadly arcuate than in the same sex of *genicularis*, apex more narrowly rounded than in latter; marginal field appreciably narrower than in the same sex of *genicularis*; longitudinal venation essentially as in female of *genicularis*, secondary anastomosed venation denser, more complex and less strongly embossed. Wings as described in *genicularis*.

Paired prosternal spines more erect and attenuate than in the female of *genicularis*; mesosternal lobes more elongate acute and apically attenuate than in the same.

Abdominal appendages as in *G. genicularis*, except that the ovipositor is slightly larger and its ventral margin is more generally arcuate and not straight proximad as in *genicularis.*

Limbs in general as in *genicularis* except that the spines of the genicular lobes, when present, are smaller than, although similarly disposed to those of *genicularis;* cephalic femora with but a single spine distad on the ventro-cephalic margin; median femora with cephalic (external) genicular lobe unspined, caudal (internal) genicular lobe spined; caudal femora with greatest depth (at proximal fourth) contained 6.3 times in the femoral length, the greatest pregenicular depth equal to two-sevenths of the greatest depth, ventral margins with six external and four internal spines in their distal two-fifths, genicular lobes both spined; caudal tibiae with 22 spines on each of the extensor margins, flexor margins each with six spines, paired in disposition and all in the distal three-fifths of the tibial length.

Coloration.—In pattern and tone as in *G. genicularis*, except that the ovipositor, adjacent distal abdominal areas and the genicular extremities of the femora, as well as the tibial maculae, are more mummy brown than black.

Measurements.—Length of body (exclusive of ovipositor), 46 mm.; length of pronotum, 8.2; length of tegmen, 9.3; length of caudal femur, 34.5; length of ovipositor, 24.5.

The type of this striking species is unique. Like *genicularis* it is an inhabitant of the undergrowth of dense lowland forest.

A New Genus from Panama

STERPHOTER[15] new genus

More nearly related to *Jimenezia* I. Bolívar[16] and *Macrochiton* Brunner[17] than to any other described genera, but differing from both in having the two genicular lobes of the cephalic femora and the cephalic (external) one of the median and caudal femora rounded and unspined, instead of all being spinigerous as in the related genera. In addition *Sterphoter* differs from *Jimenezia* in the principal (caudal) transverse sulcus crossing the pronotal disk caudad of the middle, instead of cephalad of same, in the broader and less attenuate tegmina, in the marked emphasis, instead of absence, of the tegminal mediastine vein, in the radial ramus of the tegmina diverging distad, instead of proximad, of the middle of the tegmina, and doubtless other features when both sexes of

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[15] From ***στερφωτήρ***, i.e. ***one clad in skins or hides***, in allusion to the leather color and surface texture.

[16] Anales Soc. Españ. Hist. Nat., x, p. 492, (1881). Genotype (by monotypy).—*J. elegans* I. Bolívar, from Napo, Upper Amazonia.

[17] Monogr. der Pseudophyll., pp. 20, 219, (1895). Genotype (by selection of Kirby, 1906).—*M. heros* Brunner, from Antioquia, Colombia.

Sterphoter are known. From *Macrochiton* the new genus can also be distinguished by the more deeply impressed transverse sulci of the pronotum, which latter also has the ventral margins of the lateral lobes definitely straight, and not at all arcuate, by the tegmina being denser, more chitinous and glabrose, in shape more narrowly lanceolate and rounded at the apices, in the latter section definitely narrower than at base, by the proximal portion of the marginal field of the tegmina being quadrately and far more sparsely areolate, instead of multiareolate with narrow subvertical areolae, by the discoidal field of the tegmina having far fewer and much larger areolae, and by the dorso-cephalic margin of the median tibiae being unspined, instead of spined as in *Macrochiton*.

Generic features.—Fully alate; form elongate; surface moderately polished. Male sex unknown.

Head with fastigium acute, not reaching as far distad as the internal margins of the antennal scrobes, medio-longitudinally sulcate dorsad. Palpi with ultimate article appreciably exceeding the antepenultimate one in length. Antennae approximately three times as long as body (including ovipositor).

Pronotum with two transverse sulci deeply impressed dorsad, the more caudal continued ventrad to ventral cingulate margin of lateral lobes, on dorsum this carina is broadly V-shaped, and crosses median line of pronotum slightly but definitely caudad of its middle; no median carina indicated; caudal margin of disk broadly rounded; lateral lobes longitudinal with ventral margin virtually straight.

Tegmina reaching distad as far as apex of ovipositor in female sex, slightly surpassing apices of caudal femora, very narrowly lanceolate, greatest median breadth not exceeding one-fifth of the length, costal and sutural margins each weakly arcuate, subparallel, apex rounded; texture of tegmina definitely chitinous, moderately dense, surface moderately polished over anastomosed micro-areolar knots as well as over smooth areas; marginal field for much of its length with relatively large and roughly subquadrate or subrectangular areolations, mediastine vein well and continuously marked in proximal half of marginal field; radial ramus (median vein) diverging slightly distad of middle of discoidal vein and reaching to apex of tegmen Wings ample, reaching to tegminal apices.

Prosternum strongly bispinose. Mesosternum and metasternum each strongly transverse, latter with foveolar pit caudo-median in position and sublongitudinal. Ovipositor stout, relatively deep, in length subequal to half that of caudal femur, apex acute, ventral margin evenly convex in distal two-thirds, dorsal one shallowly concave in distal half and there finely serrulate; subgenital plate trigonal, emarginate disto-mesad.

Limbs relatively elongate, cephalic and median femora slender and virtually straight as seen in profile or from dorsum, caudal femora with apices falling but slightly short of those of tegmina; both genicular lobes of the cephalic femora and the cephalic (or external) of the median and caudal femora unspined, caudal (or internal) genicular lobes of median and caudal femora definitely though briefly spined; ventro-cephalic margins of all femora spined, ventro-caudal margins of all femora unspined; cephalic tibiae with dorsal margins unspined, tympana moderately conchate; median tibiae with dorso-cephalic (or external) margin unspined, dorso-caudal (or internal) one spined.

GENOTYPE: *Sterphoter limatus* new species.

Sterphoter limatus new species (Pl. I, fig. 23; pl. II, fig. 24.)

Type.—♀; El Valle de Anton, Cocle Province, Panama. Elevation, 2600 feet. April 1, 1945. (Woodrow W. Middlekauff; "behind leaf bracts of banana stalks.") [Academy of Natural Sciences of Philadelphia, Type no. 5718.]

Size moderately large (length of body exclusive of ovipositor, 42 mm.); limbs moderately elongate.

Head with its exposed dorsal length not quite one-third that of pronotal dorsum, occipital outline in profile arcuately decurving to fastigium, which latter has its very narrow and compressed apex subbulbously elevated and not divided by the median dorsal sulcus, which extends thence proximad to the fastigial base, apices of fastigium of vertex and of fastigium of face well separated, paired ocelli on sides of fastigium of vertex relatively large and circular in basal outline, their surface deplanate, median ocellus relatively small, less conspicuous than paired ones; greatest depth of head equal to 1.5 times the greatest breadth across genae, that across eyes slightly less than the genal breadth: palpi with ratio of length of antepenultimate, penultimate and ultimate articles as 2.5, 2 and 4 respectively. Eyes but moderately prominent, slightly flattened laterad, in basal outline ovoid, narrow ventrad, greatest depth of eye slightly less than least depth of infra-ocular portion of genae (as 2.5 to 3). Antennae filamentosely developed distad of the two proximal articles, of which the first is large, its length approximately 2.5 times that of the succeeding one.

Pronotum in general sellate, with its dorsum hardly at all concave as seen in profile; greatest breadth across lateral lobes to greatest median length as 7.5 to 9.5; cephalic margin of disk rounded, caudal margin of same very broadly arcuate; transverse sulci two, the more cephalic crossing the disk slightly caudad of a quarter of its median length, the caudal, and principal, sulcus very deeply intersecting the pronotal disk slightly caudad of middle, the latter impression broadly and deeply sculptured, on the disk broad V-shaped, with its cephalad diverging arms descending regularly over the lateral lobes, of the same emphasis, and reaching the cingulate ventral margin of the lobes appreciably cephalad of its middle; prozonal sections of the disk transversely arcuate, metazonal portion subdeplanate in its caudal two-thirds and weakly papillose in its cephalic third; lateral lobes definitely longer than deep, cephalic margin nearly straight, ventro-cephalic angle rounded rectangulate, ventral margin nearly straight and broadly and conspicuously cingulate, caudal margin with a shallow obtuse-angulate humeral notch, thence ventrad the caudal margin is somewhat oblique, nearly straight, ventro-caudal angle narrowly obtuse.

Tegmina narrowly lanceolate, with apices surpassing those of the caudal femora by no more than half the dorsal length of the pronotum, costal and sutural margins subparallel, both in their entirety very faintly arcuate, except that the costal margin has its median half virtually straight and its distal section slightly more arcuate than the corresponding section of the sutural margin, apex semi-ovate in its rounding, greatest breadth (mesad) contained 5.5 times in the tegminal length; marginal field broad proximad, regularly narrowing distad, anal field relatively narrow, its demarcation less clearly defined distad than proximad; mediastine vein marked, suboblique, dividing the rather regular subquadrate to subrectangular large pane-like areolae of the marginal field into two series, distad these are less regular, narrow, crowded and suboblique in trend, median vein diverging slightly distad of middle of discoidal vein and, after an undulating course, distad sending three direct and oblique rami to the sutural margin before reaching the tegminal apex, both ulnar veins undulate in the fashion characteristic of the group, major areolations of the pre-ulnar section of the discoidal field large and in general squarely subquadrate, of the inter-ulnar section of the field somewhat smaller and chiefly obliquely subquadrate (i.e. with the transverse sectors oblique in relation to the axes of the ulnar veins), minor anastomosing areolations present in all the major areolae except those immediately proximad in the discoidal field and in the proximal two-thirds of the marginal field, these grouped mesad in each major areolation as usual in members of many genera of the Pseudophyllinae.

Prosternum with the paired spinose processes strongly developed, parallel, moderately inclined caudad. Mesonotum with the lateral wing-like sections having their terminal angles subacute, slightly submammillate, those of the metanotum obtuse-angulate.

Ultimate tergite with its dorsal section inbent ventrad about the base of the supra-anal plate, which latter is separated from the ultimate tergite by a poorly evident suture; supra-anal plate relatively small, broadly and roundly subtrigonal in outline, its dorsal surface subconcave with a shallow and very fine medio-longitudinal sulcation, which bisects the apex. Cerci simple, styliform, over twice as long as the supra-anal plate, subequal in breadth in the proximal two-thirds, distal third conically tapering, seen in profile moderately upcurved, as seen from dorsum the proximal two-thirds are nearly straight with the distal third appreciably incurved. Ovipositor approximately one and one-sixth times as long as the cephalic femora, greatest depth at proximal third contained 4.8 times in the ovipositor length, distal two-fifths of ovipositor regularly narrowed by the shallow concavity of that section of the dorsal margin, which area is also finely crenulato-serrulate, more proximal section of same margin weakly undulate, unarmed, ventral margin evenly convex in distal two-thirds and entire, apex acute, lateral surface of apical fifth with six or seven spaced subvertical low cutting ridges. Subgenital plate relatively small, in outline trigonal subcordiform, apex arcuate-emarginate, plate in section strongly reversed tectate, fitting closely about base of ovipositor.

Cephalic femora equal in length to one and two-thirds times that of cephalic femora, ventro-cephalic margin with four or five spines in distal two-thirds, genicular lobes well rounded; cephalic tibiae slightly longer than the femora, the tympana with low conchate capsules, the dorsal slits of same narrow, ventral tibial margins with seven to eight spines, these more widely spaced proximad than distad. Median femora slightly shorter than the cephalic, ventro-cephalic margin similarly spined, cephalic genicular lobe broadly rounded, caudal (or internal) genicular lobe distinctly but briefly spined; median tibiae somewhat longer than the femora, dorso-caudal (or internal) margin with three to five spines, ventral margins with eight spines, spaced as on cephalic tibiae. Caudal femora moderately inflated proximad, tapering to a subequally narrow distal third, greatest depth (at proximal fourth) contained 5.7 times in the femoral length, ventral margin definitely straighter than dorsal, external (or cephalic) genicular lobe very briefly spined, ventro-external (or cephalic) margin with nine to ten inclined spines;[18] caudal tibiae slightly longer than femora, spined as usual in this group.

Coloration.—Pale base color ochraceous-buff, lightening on the more ventral portions of the head and sections of the ventral half of the lateral lobes of the pronotum to light ochraceous-buff, in general largely overlaid by a pattern of darker coloration, varying areally as here detailed.

Head with dorsal surface of occiput and fastigium solidly washed with dresden brown, limited laterad at the point usually reached by the ventral border of postocular bars when these are present; face, genae and mouthparts basically pale, the face with a fully defined (paratype) or but partially indicated (type) subtrigonal maculation of mummy brown, which narrows dorsad, is there subtrilobate with the median lobation larger and higher than the paired lateral ones, and extending ventrad to and involving the whole breadth of the facio-clypeal suture, the base of the clypeus also narrowly involved, but leaving a pale median ocelliform dot on the facial side of the suture; ventral section of antennal scrobes and an oblique bar from the ventro-caudal point of the eye to the proximal portion of the mandibular articulation marked with mummy brown to a greater or lesser degree of completeness (more decided in paratype); palpi pale, darkening distad on the ultimate article; eyes bister to mummy brown; antennae·hay's russet proximad, evenly passing to mummy brown before their middle is reached, the two proximal articles with dorsal surfaces pale.

Pronotum with dorsum solidly hay's russet, this not extending ventrad of the middle of the lateral lobes, the ventral portions of the latter pale, as already described, more ventro-lateral portions of the russet area, and particularly at the lateral points of the caudal margin of the disk, washed rather spottily with mummy brown, this following ventrad across the pale area along the principal sulcus and suffusing the middle of the ventral margin of the lateral lobes.

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[18] In paratype 11 to 12 spines are here present.

Tegmina with base tone of proximal portion mars brown, evenly passing distad to nearly as light as tawny; mediastine vein and cross-veins of proximal portion of marginal field citron yellow to straw yellow, strongly contrasted with base tone, humeral trunk with its components little contrasted in coloration, cross-veins of proximal sections of discoidal field and the anastomosed veinlet masses of both the entire discoidal and distal section of the marginal fields ranging from amber yellow (proximad) to dull honey yellow (distad), the latter much less contrasted with the base tone than is the case with the more proximal venation. Wings heavily infumate.

Ventral surface pale, abdomen pale with its dorsal surface washed with cinnamon-brown, evenly paling ventro-laterad, spiracular areas marked with mummy brown, a marked spot of the same adjacent to the cercal bases; supra-anal plate of the dark color of the abdominal dorsum, cerci solidly pale, ovipositor pale, heavily marked at base dorso-laterad with mummy brown, dorsal valves solidly blackish brown distad, passing through apricot orange to the pale base color proximad, ventral valves with distal half blackish brown, this tint narrowly extending proximad for some distance along the suture.

Limbs basically pale, cephalic and median largely washed with apricot orange to hay's russet; cephalic and median femora evenly deepening in tone distad, each with a pregenicular annulus of the pale base color, which is well contrasted and very evident, fine punctulae of mummy brown in one or two series (latter on cephalic, i.e. external, face of median femora only) continued from adjacent darker areas conspicuously cross the pale annuli, ventro-cephalic margin of each femora alternately checked with the pale base color and brownish black, being pale about the bases of the hay's russet spines; cephalic and median tibiae washed with the mantling color but not definitely annulate. Caudal femora with the pale base color near cinnamon, the narrow dorsal surface washed with cinnamon-rufous, this darkening distad to russet which more nearly encompasses the femoral shaft preceding a broad and marked complete pale annulus, which is ticked across by a single series of mummy brown punctulae as described for the cephalic and median femora, distal extremity of caudal femora russet, washed with mummy brown, particularly bordering the pale annulus, ventro-external (i.e. ventro-cephalic) margin contrasted as described for the other femora; caudal tibiae pale, lightly washed and weakly clouded with tawny, spines hay's russet, dark tipped; caudal tarsi colored essentially as caudal tibiae.

Measurements.—♂ (type); length of body (exclusive of ovipositor), 42 mm.; length of pronotum, 10.5; length of tegmen, 48.5; length of caudal femur, 40; length of ovipositor, 21.5.

In addition to the type I have before me a paratypic female bearing the same data as the type, which in measurements is virtually identical with the type. This paratypic specimen shows no noteworthy structural differences from the type, and those of coloration have been mentioned above.

The coloration of the femora of this species suggests that of the same parts in *Eucocconotus annulatus* Hebard and *Macrochiton heros* Brunner, both from Colombia.

EXPLANATION OF FIGURES

PLATE I

FIGS. 17–18.—*Bliastes molaris* new species. El Valle de Anton, Panama. Male (type). 17.—Lateral view (natural size). 18.—Dorsal view (natural size).

FIGS. 19–20.—*Bliastes middlekauffi* new species. El Valle de Anton, Panama. Male (type). 19.—Lateral view (natural size). 20.—Dorsal view (natural size).

FIGS. 21–22.—*Bliastes atrifrons* Brunner. Volcán de Chiriquí, Panama. Male. 21.—Lateral view (natural size). 22.—Dorsal view (natural size).

FIG. 23.—*Sterphoter limatus* new genus and species. El Valle de Ancon, Panama. Female (type). Lateral view (natural size).

PLATE II

FIG. 24.—*Sterphoter limatus* new genus and species. El Valle de Ancon, Panama. Female (type). Dorsal view (natural size).

FIGS. 25–26.—*Goethalsiella genicularis* new species. La Emilia, Costa Rica. 25.—Lateral view of male (type) (natural size). 26.—Lateral view of female (allotype) (natural size).

FIG. 27.—*Goethalsiella grandis* new species. Suretka Trail, Costa Rica. Female (type). Lateral view (natural size).

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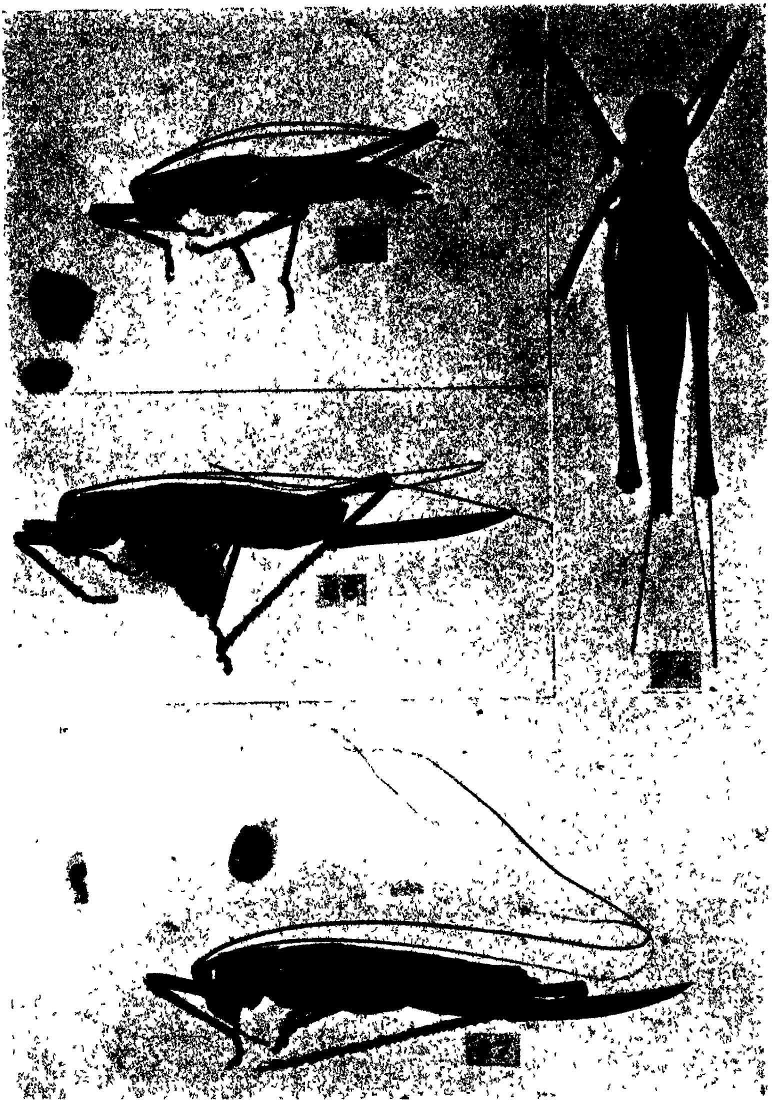
REHN—AMERICAN TETTIGONIIDAE



REHN—AMERICAN TETTIGONIIDAE

REVIEW OF THE ONOCEPHALINI (COLEOPTERA: CERAMBYCIDAE)

(Plate III)

BY LAWRENCE S. DILLON AND ELIZABETH S. DILLON

Not since 1872, when Lacordaire briefly summarized the known genera of the tribe in his *Genera des Coléoptères,* has this group received any thorough treatment. Since that time a new genus and several species have been described, most recently by Breuning and Melzer, but there has never been a complete revision of its components.

This study is based almost entirely on the collections of the Academy of Natural Sciences at Philadelphia [A. N. S. P.], where the types of all the new species are deposited. Other material was received from the American Museum of Natural History [A. M. N. H.], Lionel Lacey, of New Rochelle, N. Y., and the Carnegie Museum [C. M.], Pittsburgh.

The authors wish to acknowledge the assistance received from the following persons during the course of this study: E. T. Cresson, Jr., Lionel Lacey, John C. Pallister, and Walter Sweadner; and to each of them sincere thanks are extended.

From the Onciderini, to which it is closely allied, this tribe differs in having the antennal scape slender, nearly cylindrical; the front slightly convex, more strongly inclined than the anterior margin of the prothorax when viewed from the side; the femora more feebly clavate, not so robust; and the first three or four antennal segments are densely fimbriate, at least beneath. From the Pachypezini, which they resemble in the strongly inclined front, the members of the present group are distinct in having the pronotum strongly transverse; eye with lower lobe smaller than gena; antennal scape extending well past middle of the pronotum; procoxae reaching nearly to anterior and posterior margins of the prothorax; mesosternal process rather broad; and the body form less elongate.

A diagnosis of the tribal characteristics follows:

Elongate-ovate, distinctly attenuate posteriorly, moderately robust, subcylindrical; small to moderate in size, ranging from 10 to over 20 mm. in length. Head at base about as wide as prothorax, not retractile, slightly transverse when viewed from above; front elongate, parallel-sided or narrower above, convex when viewed from side, more strongly inclined than anterior margin of prothorax; eyes deeply emarginate, lower lobe transverse, always smaller than gena; antennal tubercles prominent, contiguous or well separated, armed at apex in male; antennae one and one-half times as long as body in male, distinctly longer than body in female, densely fimbriate on first three or four segments, at least beneath, scape slender, cylindrical, reaching behind middle of pronotum, not cicatriced. Pronotum transverse, unarmed, base and apex subequal in width; disk at least feebly transversely rugose. Elytra tapering posteriorly; apices separately rounded; humeri prominent, with a distinct tubercle at angle; hind wings present. Procoxal cavities always closed behind, nearly attaining anterior and posterior margins, angulate externally; mesocoxal cavities angulated and open externally. Legs moderately short; procoxae large, unarmed; femora rather slender, feebly clavate apically; mesotibiae sulcate externally; tarsi slightly shorter than tibiae, first three segments subequal in length, about as long as broad, claw segment nearly as long as rest together; claws divergent, simple. Abdomen with first sternite elongate, as long as second and third together, fifth sternite about equal to third and fourth together.

The tribe is apparently found only in the southeastern portion of Brazil; nothing is known of the immature stages nor of the food habits.

Key to Genera

1. Mesosternum not produced or tuberculate anteriorly; elytra granulate at base .... **Onocephala**
   Mesosternum produced or tuberculate anteriorly; elytra simply punctate 2
2. Mesosternum strongly produced anteriorly; head above nearly as long as pronotum .... **Stethoperma**
   Mesosternum feebly produced anteriorly; head above distinctly shorter than pronotum .... **Pseudoperma**

ONOCEPHALA Thomson

1857. *Onocephala* Thomson, Arch. Ent., I, p. 304; Class. Ceramb., 1860, pp. 120, 123; Syst. Ceramb., 1864, p. 390. Lacordaire, Gen. Col., IX, 1872, p. 689.

1872. *Perma* Lacordaire, Gen. Col., IX, pp. 689, 690.

At once distinguished from the other genera of the tribe by the simple mesosternum; the antennae are much more heavily fringed, and, with the exception of *thomsoni,* are fringed on all surfaces of third and fourth segments.

Elongate-ovate, moderately robust. Head above distinctly shorter than pronotum; front elongate, feebly divergent or convergent above; genae elongate, vertical; eye with lower lobe slightly transverse, two-thirds as tall as gena; antennal tubercles prominent, contiguous or well separated. Pronotum transverse, base and apex subequal in width; disk transversely rugose. Elytra strongly attenuate to apices (less so in female); apices separately rounded; base granulate or granulate-punctate; humeri prominent, with a large tubercle at the angle. Prosternum simply rounded; mesosternum broad, deeply emarginate at apex, without any trace of a tubercle. Legs rather short; procoxae globose; femora robust, clavate; protarsi feebly dilated in males. Antennae about twice as long as body in male, one and one-third times body length in female, heavily fringed on first, third, and at least part of fourth segments; scape feebly clavate, reaching well behind middle of pronotum; third segment slightly longer than scape (distinctly so in male); rest gradually shorter; eleventh elongate in male.

GENOTYPE: *Onocephala rugicollis* Thomson, by original monotypy.

Remarks.—Perma was distinguished from *Onocephala* only by the head being concave between antennal tubercles and the front rectangular. These characters intergrade between the various species and thus are not available for generic distinctions.

Key to Species

1. Elytra without a sutural vitta 2
Elytra with a sutural vitta at least near apex 6
2. Elytra gray pubescent, with many black glabrous punctures, otherwise immaculate .... **nodipennis**
Elytra not as above 3
3. Elytra with median macula rounded 4
Elytra with median macula elongate, dentate posteriorly 5
4. Pronotum with rugosities strong, running across entire disk; elytra with granulate-punctures numerous, close-set .... **diophthalma**
Pronotum with rugosities feeble, short, irregular; elytra with granulate-punctures coarse, few, scattered .... **tepahi** new species
5. Antennae with fourth segment pale on basal two-thirds; elytra with anterior border of median macula regular, not dentate, basal granulations coarser, more approximate .... **lineola** new species
Antennae with fourth segment uniformly testaceous; elytra with anterior border of median macula dentate, basal granulations finer, well separated .... **aulica**
6. Elytra each with five pubescent vittae, three discal, one lateral, and one sutural .... **vittipennis**

Elytra each with no more than four entire vittae..................7

7. Elytra coarsely granulate on base, before middle from sides a strongly oblique pubescent vitta; antennae with fourth segment nearly entirely fringed..**obliquata**

Elytra granulate-punctate on base, without a median oblique vitta; antennae with fourth segment at most fringed on extreme base...8

8. Elytra each with an oblique median macula, interrupting the discal vittae.................................**lacordairei** new species

Elytra without a median macula...............................9

9. Elytra each with two distinct discal vittae and an entire sutural vitta; antennae heavily fringed proximally....................**suturalis**

Elytra without distinct discal vittae, sutural vitta present only on apical quarter; antennae sparsely fringed proximally
thomsoni new species

Onocephala obliquata Lacordaire (Plate III, fig. 5.)

1872. *Onocephala obliquata* Lacordaire, Gen. Col., IX, p. 690, atlas, pl. 105, fig. 2 (not 3). [Type locality, Brazil.]

In addition to its distinctive color pattern, this species is recognizable from related species by the distinct dorsal vitta reaching from vertex to apex of elytra; the elytral tips strongly acuminate; the tubercles on base of elytra more or less seriate; antennal tubercles in male distinctly separated; and antennae heavily fringed on base of fourth segment.

Male. Elongate-ovate, moderately robust, cylindrical, elytra subdepressed; dark reddish-brown to fuscous, elytra chestnut-brown or olive-brown (never greenish), covered rather densely with ashy or ashy-brown pubescence; with markings of creamy-white or orange-white pubescence as follows: Head with a broad median vitta above, extending posteriorly to base of pronotum, another one, somewhat paler, each side behind eye to near apex of metepisternum; front, genae, and scutellum largely covered; elytra with a common sutural vitta, gradually evanescent and narrower apically, an irregular small macula on center of each disk at basal quarter, and a strongly oblique, irregular vittiform macula from sides at basal quarter to middle of disk at apical third, its posterior margin strongly notched, and a broad vitta from near this macula to apex, bifurcated for most of its length by a brown line. Front with a broad, oblong patch slightly darker which is margined each side with a glabrous streak; genae each with two or three brown or glabrous vittae. Pronotum on each side of disk basally with a short pale vitta, usually obsolete. Elytra each with four or five slightly arcuate dark brown pubescent or glabrous vittae, inner two longest, coalescing apically. Body beneath and legs dark reddish-brown to piceous, covered with pale creamy white pubescence, interrupted by numerous, irregularly-sized dots; metasternum indistinctly tinged with brown laterally; abdomen glabrous at middle of second to fourth sternites and on apex of first. Antennae with scape fuscous, rest dark reddish-brown, much paler distally; sparsely covered with pale pubescence.

Head above minutely densely punctate, a few coarse punctures near middle, median line extending from occiput to near epistoma; front broadly oblong, gradually widened above from near clypeus, densely minutely punctate; genae very elongate; eyes with lower lobes transverse, small, two-fifths as tall as gena; antennal tubercles robust, prominent, distinctly separated, at apex armed with an erect, slightly arcuate horn. Pronotum cylindrical, transverse, a little wider at apex than at base; transverse sulci obsolete; disk covered with numerous transverse carinae and with a number of rather coarse punctures each side and especially toward apex. Scutellum transverse, sides straight, oblique, apex broadly rounded. Elytra gradually tapering to apices, which are distinctly acuminately produced and separately rounded; disk at basal fifth with a number of rather fine, irregular tubercles, only a few near and behind humerus, thence punctate to middle, punctures arranged more or less in rows, nearly obsolete behind apical third; humeri rather prominent, anterior margin straight, angle with a large, obtuse tubercle. Prosternum rather broad, gradually narrowed anteriorly; mesosternal process simple, about as wide as long, apex and sides broadly emarginate; fifth sternite much longer than fourth, apex feebly notched. Procoxae large, prominent, with an indistinct tubercle anteriorly; femora feebly clavate, rather slender, profemora robust. Antennae about twice as long as body, sixth segment attaining elytral apex, lower half densely covered with long hairs to middle of fourth segment, finely, sparsely fringed on fifth and sixth; scape elongate, attaining middle of pronotum, rather robust, subcylindrical; third segment with fringing hairs above as well as below, one third longer than first; fourth to seventh shorter, eighth to tenth gradually longer, eleventh very elongate.

Female. As male but antennal tubercles with apical horn shorter; procoxae not tuberculate, profemora a little less robust; fifth sternite more than twice as long as fourth, apex rounded, a longitudinal impressed line from base to near apex medially; antennae about one fourth longer than body, eighth segment surpassing elytral apex, segments gradually shorter from fourth, eleventh feebly longer than tenth.

Length 15–17 mm.; width 5–5.5 mm.

Distribution.—Southeastern Brazil.

BRAZIL: 2♀; no locality data [♀; February, 1941; L. Lacey; ♀; A.N.S.P.]. 2♂; Hansa Humbolt, Santa Catharina, Oct., 1941; December, 1943; (A. Maller); [L. Lacey]. ♀; Mafra, Santa Catharina, April, 1939; (A. Maller); [L. Lacey]. ♀; Espirito Santo; [A.N.S.P.]. ♀; Curityba, Paraná; [C.M.].

Onocephala suturalis Bates (Plate III, fig. 6.)

1872. *Perma aulica* Lacordaire, Gen. Col., ix, p. 690. [Preoccupied by *Onocephala aulica* Lucas.]

1884. *Perma suturalis* Bates, Ent. Month. Mag., xxiv, p. 63. [Type locality, Rio de Janeiro.]

Distinguishable from *obliquator* by the elytra lacking oblique vittae and in being feebly granulate-punctate on base; and antennae light reddish-brown beyond scape, with fourth segment feebly fringed on base.

Female. Elongate-ovate, rather robust, cylindrical; dark reddish-brown or fuscous, often with a greenish luster, with pale ashy pubescence as follows: Head above and pronotum medially broadly vittate; front entirely pubescent, except for median line and a glabrous broken vitta each side of middle; genae with two fine, curved vittae. Scutellum entirely pubescent. Elytra with a sutural vitta and a broad one toward each side of disk, each disk with one or two fine, slightly oblique ones in addition; sides (as well as those of head and pronotum) irregularly pubescent. Body beneath slightly paler, covered with pale ashy pubescence; abdomen (and sometimes sterna) glabrous and shining medially. Legs dark reddish-brown, covered with pale ashy pubescence; tarsal claw segments paler reddish-brown, not ashy pubescent. Antennae with scape dark reddish-brown, remaining segments distinctly paler reddish-brown; with a dense, long, fuscous fringe on first three segments beneath, fringe thence to fifth or seventh segments much sparser and shorter.

Head with a median line from occiput to epistoma; front minutely alutaceous; antennal tubercles slightly prominent, feebly robust, widely separated, unarmed. Pronotum distinctly transverse, base and apex subequal in width, sides feebly arcuate, unarmed; disk transversely rugose, the rugosities not very distinct; at middle of base a distinct, short, transverse sulcus. Scutellum short, strongly transverse. Elytra with sides attenuate to apices, which are separately narrowly rounded; disk at base with a number of small, irregular granulate-punctures, behind basal quarter punctures simple, gradually finer, more or less seriately arranged, obsolete before apex; humeri slightly prominent, anterior margin slightly arcuate, a little oblique, angle with a prominent glabrous tubercle. Fifth sternite not quite equal to third and fourth together, with a distinct median impressed line, apically often deeper and broader, near apex a number of fine punctures. Antennae one third again as long as body, eighth segment surpassing elytral apex; scape reaching to middle of pronotum, cylindrical, feebly enlarged apically; third segment equal to first in length, rest gradually shorter.

Length 15–17 mm.; width 5–5.6 mm.

Distribution.—Southeastern Brazil.

BRAZIL: 3 ♀; Espirito Santo; [A.N.S.P.].

Onocephala lacordairei new species (Plate III, fig. 7.)

Closely allied to *O. suturalis,* but differs in the elytra having an oblique fascia and the granules on the base much smaller and the rugosities of the pronotum more distinct; antennae with basal three segments having ventral and lateral surfaces heavily fimbriate.

Female. Elongate-ovate, rather robust, subcylindrical; elytra subconvex; brown, elytra paler. Head and pronotum fulvous-gray pubescent, this condensed medially on head above and pronotum to form a rather broad vitta, front with four irregular vittae (two either side of middle), gena and sides of head with indistinct vitta, of same pubescence. Scutellum entirely fulvous-gray pubescent. Elytra with fulvous-gray markings as follows: at suture with a common vitta, slightly before middle a more or less elongate triangular, oblique fascia of which the anterior point attains humerus laterally, with the narrow point near but not attaining suture, from the middle of posterior margin of fascia to apex a rather broad vitta which is attenuate apically, between suture and humerus on base two very indistinct and irregular vittae which usually attain apex, remainder of surface glabrous. Beneath brown, all over except for a broad shining vitta medially on abdomen with fulvous-gray pubescence. Legs light brown except tarsal claw segments which are dark brown, covered with thin fulvous-gray pubescence. Antennae with scape brown, remaining segments paler, thinly clothed with pale fulvous, scape of third heavily fimbriate with dark fulvous pubescence beneath and on sides. Head above alutaceous with a median impressed line from occiput to near epistoma; antennal tubercles prominent, widely separated, minutely armed at apex. Pronotum distinctly transverse; sides nearly straight, unarmed; base and apex subequal; disk entirely with distinct but rather feeble transverse rugosities. Scutellum strongly transverse; sides straight, oblique; apex very broadly arcuate. Elytra gradually attenuate; apices separately, rather narrowly rounded; extreme base feebly granulate-punctate, from thence with coarse, well separated, more or less seriate punctures which become evanescent from middle; humeri prominent, nearly right angular with a huge rounded tubercle at angle. Fifth sternite with apical margin emarginate, surface at apex shallowly, broadly, transversely impressed. Antennae about one and one-third times body length; heavily fimbriate on first three segments, less heavily on fourth, only very slightly on fifth; scape cylindrical, feebly widened apically, reaching beyond middle of pronotum; third segment cylindrical, straight, slightly shorter than scape, remaining segments gradually shorter, tenth and eleventh subequal.

Length 15.7–16.2 mm.; width 5 mm.

Holotype.—Female, Brazil; [A.N.S.P. 8244].

Paratypes.—2 females, Brazil; [A.N.S.P.].

Onocephala thomsoni new species (Plate III, fig. 8.)

Distinguished from *O. suturalis* by the lack of distinct vittae on the elytra; the antennal segments from third are testaceous and the basal three segments much less heavily fimbriate and only on the ventral side.

Male. Specimen rubbed. Elongate-ovate, rather robust, subcylindrical, elytra subconvex; head and pronotum piceous, elytra dark brown. Head and pronotum thinly yellowish-gray pubescent, this pubescence condensed medially on head and pronotum to form a vitta, front with four vittae, gena with one of same color pubescence. Scutellum thinly yellowish-gray pubescent. Elytra each with an indistinct and irregular yellowish-gray pubescent vitta from humerus (where it is very narrow and indistinct) slightly oblique to apex, just before middle it becomes much wider, apical fourth with numerous very minute, more or less seriate maculae either side of vitta. Beneath dark reddish-brown, abdomen with a broad shining vitta medially which becomes attenuate apically. Legs piceous, tarsi and claw segment reddish-brown; thinly clothed with pale yellowish-gray pubescence. Antennae with scape dark reddish-brown, remaining segments dark testaceous; scape thinly clothed with grayish-brown pile, remaining segments thinly gray pubescent.

Head above alutaceous with a median impressed line from occiput to epistoma; antennal tubercles widely separated, armed at apex with a short, blunt tooth. Pronotum transverse; base and apex subequal; sides feebly arcuate, unarmed; disk with many irregular, transverse rugosities. Scutellum strongly transverse, sides nearly straight, feebly oblique, apex broadly arcuate. Elytra distinctly attenuate; apices separately, rather narrowly rounded; basal quarter feebly granulate-punctate, thence punctate, punctures coarse, well-spaced, becoming less distinct beyond middle; humeri prominent, at angle with a large rounded tubercle. Fifth sternite at apex subtruncate. Antennae about one and two-thirds body length; heavily fimbriate only on under side on scape, much less heavily fringed on third and very slightly so on fourth; scape reaching beyond middle of pronotum, cylindrical, feebly widened apically; third cylindrical, straight, slightly longer than scape, remaining segments very gradually shorter, eleventh very slightly longer than tenth.

Length 13 mm.; width 4.3 mm.

Holotype.—Male; Brazil; [A.N.S.P. 8245].

Onocephala aulica Lucas (Plate III, fig 2.)

1859. *Onocephala aulica* Lucas, in Castelnau, Voy. Amer. Mer., Ins., p. 191, pl. 13, fig. 4. [Type locality, interior Brazil.]

This and the next two species have the antennal tubercles approximate in both sexes; in the present form these structures are less close than in the following. It is distinguished further by the elytra having finer, non-seriate punctation, its longitudinal striping is less distinct, and the pronotal disk is coarsely rugose, the rugosities continuous from side to side.

Male. Elongate-ovate; rather robust; cylindrical, elytra subconvex; head and pronotum light brown, elytra dark testaceous. Entirely moderately clothed with tawny-gray pubescence; pronotum laterally with a broad tawny-white vitta; elytra with many narrow glabrous vittae some of which are coalesced at apex; medially with a moderate sized, pale tawny macula, which is more or less oblique and with the anterior and posterior margins both dentate, the posterior being more strongly so. Beneath light reddish-brown, tawny-gray pubescent with many small, more or less rounded, glabrous areas; mesosternal side-pieces and metepisterna with dense tawny-white pubescence. Legs nearly testaceous with thin pale tawny-gray pubescence in which there are many small glabrous areas. Antennae with scape light reddish-brown, remaining segments testaceous, clothed with a brownish-tan pubescence and on scape, third and fourth with dense fimbriation of same pubescence.

Head above alutaceous with a few coarse, shallow punctures; a median impressed line from occiput to near epistoma; front feebly elongate, sides straight narrowed below, surface roughly transversely rugose; genae elongate, surface rugose; eye with lower lobe transversely oval, less than one-half genal height; antennal tubercles prominent, subcontiguous; armed at apex with a strong tooth. Pronotum slightly transverse, base and apex subequal; sides nearly parallel, unarmed; entire disk regularly transversely rugose. Scutellum transverse, sides straight oblique, apex subtruncate. Elytra moderately attenuate to apices which are each narrowly rounded; extreme base with one or two irregular rows of coarse granules, these are followed by small scattered punctures (not seriate) which become finer apically; humeri prominent, angle with a large, rounded tubercle, and two or three large granules extending posteriorly. Antennae (only to fifth segment of left and to fourth of right present) with fifth segment not quite attaining apices of elytra; scape cylindrical, feebly widened apically and reaching to middle of pronotum; third segment one-third longer than scape, straight, cylindrical; fourth distinctly longer than fifth.

Female. More robust; less attenuate; antennal tubercles slightly more separated, armed much less strongly at apex; fifth sternite with no visible transverse impression at apex but with the linear impression medially to base; antennae with only first three segments present.

Length 18–19 mm.; width 5.5–6.2 mm.

Distribution.—Brazil.

Brazil: ♂, ♀; no locality data; [A.M.N.H.].

Remarks.—Specimens described above were in poor condition.

Onocephala diophthalma Perty (Plate III, fig. 1.)

1830. *Saperda diophthalma* Perty, Delect. Anim Artic., p. 98, pl 19, fig 15. [Type locality, Brazil.]

1857. *Onocephala rugicollis* Thomson, Arch. Ent., i, p. 305. Lacordaire, Gen. Col., ix, 1872, p. 690, nota 1.

Distinct from *aulica* in having the elytral median macula rounded, the basal punctation coarse, and the tubercles greenish-brown, not black.

Male. Elongate-ovate, rather robust, subcylindrical; piceous, elytra olive-brown or pale olive; entirely clothed with dull gray pubescence, interrupted by numerous rounded glabrous maculae. Elytra with a large, rounded, pale creamy pubescent macula on each elytron placed a little towards the sides before middle. Body beneath dark reddish-brown, covered with sparse hoary or pale fulvous pubescence, interrupted by densely placed, rounded, glabrous maculae. Legs reddish- or olive-brown, tibiae and tarsi testaceous, much paler than femora; sparsely hoary pubescent, with glabrous maculae. Antennae with scape and second segment dark reddish-brown, remaining segments testaceous, fourth segment sometimes broadly, indistinctly paler basally; a dense yellowish-brown fringe on first to third segments, on fourth much shorter and sparser, thence to eleventh almost wanting.

Head with a fine median line from occiput to epistoma; front elongate, vertical, sides more or less parallel, its surface (as is that of genae) sparsely, rather coarsely punctate; eye with lower lobe strongly transverse, oblong-ovate, less than half as tall as gena; antennal tubercles robust, prominent, subcontiguous, with a long upright tooth at apex. Pronotum cylindrical, sides feebly arcuate; disk coarsely densely rugose. Scutellum short, strongly transverse, apex broadly rounded. Elytra attenuate to apices, which are separately narrowly rounded; disk at base coarsely irregularly granulate-punctate, the punctures about as large as granules, thence simply, coarsely, irregularly punctate to basal third, then much more finely and more sparsely punctate to apex; humeri slightly prominent, angle acute, with a large tubercle, anterior margin nearly straight, feebly oblique. Antennae more than twice length of body, the sixth segment strongly surpassing elytral apex; scape just attaining middle of pronotum, cylindrical, sparsely scabrose above, rugose beneath and on sides, especially basally; third segment one-sixth longer than scape, fourth much shorter, fifth shortest, rest gradually elongate (from eighth wanting).

Female. Differs from male in having antennal tubercles approximate but not contiguous, the horn shorter; elytra less attenuate; procoxae unarmed; antennae about half again as long as body, segments from fourth gradually shorter; and fifth sternite deeply impressed medially, towards apex flattened.

Length 19.5–22 mm.; width 6–6.5 mm.

Distribution.—Eastern Brazil.

BRAZIL: 2♂, 2♀; no locality data; [A.N.S.P., ♀; A.M.N.H., ♂, ♀].

Onocephala tepahi new species (Plate III, fig. 4.)

Very closely related to *O. lincola,* from which it differs in having the elytra with a rounded premedian macula, each with only four or five longitudinal glabrous lines, the basal punctation coarse, sparse, and only a few granules present; the antennae with fringe dark brown, the fourth segment pale on basal, dark brown on apical, half; pronotum without whitish pubescence on sides; and front constricted between eyes. From *diophthalma* it differs in having the antennal third segment fuscous, the following segments and tibiae and tarsi dull brown; the presence of glabrous lines on elytra; and the front narrowed between eyes, and elytral basal punctures larger and fewer in number.

Male. Elongate-ovate, rather robust, subcylindrical; fuscous (towards elytral apices paler), entirely covered with brownish-gray pubescence. Head with pubescence largely brownish-fulvous. Elytra with pubescence paler toward sides posteriorly; on each disk with four elevated glabrous lines (sometimes a faint line near suture) and with four or five series of coarse, rounded, glabrous maculae; before middle each side with a large, rounded, cream-colored pubescent macula, outlined with brown. Body beneath as above, pubescence interrupted by dense, coarse, round, glabrous maculae. Legs fuscous, tibiae and tarsi dull, light reddish-brown. Antennae with first to third segments fuscous, base of fourth testaceous, remaining segments and apical half of fourth dull light reddish-brown; first three segments with a dense, long, dark brown fringe on entire lower surface, fourth segment with a shorter, sparser fringe, pale on basal, dark brown on apical, half.

Head with a fine median line from occiput to epistoma; front elongate, vertical, sides gradually narrowed above, between eyes distinctly so, surface (as is that of genae) sparsely, finely punctate; eye with lower lobe half as tall as gena, transverse; antennal tubercles robust, prominent, closely approximate but not contiguous, with a short vertical tooth at apex. Pronotum transverse, cylindrical, disk coarsely, not so densely transversely rugose. Scutellum short, strongly transverse, apex feebly arcuate. Elytra attenuate to apices, which are separately narrowly rounded; disk at base with a few granulate-punctures, followed by sparse, very coarse simple punctures to near middle, thence punctures fine to apex; humeri slightly prominent, angle with a feeble tubercle, anterior margin rounded. Procoxae unarmed. Antennae about twice length of body, sixth segment attaining elytral apex; scape cylindrical, not scabrose above, reaching to slightly beyond middle of pronotum; third segment nearly one-third longer than scape, fourth and fifth successively shorter, rest subequal to fifth (wanting from eighth segment).

Length 12.5 mm.; width 4.3 mm.

Holotype.—Male; Brazil; [A.N.S.P. 8246].

Onocephala lineola new species (Plate III, fig. 3.)

From *aulica* this species is distinct in having the antennal tubercles contiguous; the antennae dark brown except basal two-thirds of fourth segment (on which the fringe is very pale also); elytra with basal granules much larger and more numerous and the punctures are larger, rounded, and more or less seriate.

Male. Elongate-oval, rather robust, subcylindrical; elytra subconvex; dark brown, elytra beyond base an olive-brown. Head, pronotum and elytra moderately clothed with a tawny-gray pubescence; pronotum with a broad vitta laterally of whitish; elytra with many, narrow dark brown, glabrous vittae, many of which coalesce at apex, at middle each with a moderate-sized, feeble, oblique, tawny-white macula which is deeply and narrowly emarginate on apical margin. Beneath brown, tawny-gray pubescent with numerous small, rounded glabrous areas; the mesosternal side pieces and metepisterna densely tawny-white tomentose; abdomen with a shining vitta medially which is attenuate apically. Legs dark olive-brown, thinly tawny-gray pubescent and interspersed with numerous glabrous areas on femora; tibiae and tarsi slightly paler in surface color; claw segment nearly testaceous. Antennae with scape dark brown, remaining segments olive-brown, becoming slightly paler apically, except basal two-thirds of fourth segment which is testaceous; scape tawny-gray pubescent; third brown pubescent, fourth tawny-gray on basal two-thirds, and apical third of fourth and remaining segments thinly dark brown pubescent; scape and basal two-thirds of fourth heavily fimbriate with tawny-gray pubescence, third with brown pubescence; remaining segments not fimbriate.

Head above finely alutaceous, with a median impressed line from occiput to near epistoma; front elongate, sides subparallel, surface finely punctate with a few coarse punctures interspersed on upper half; genae elongate; eye with lower lobe transversely oval, less than half genal height; antennal tubercles prominent, contiguous, at apex with a strong, robust tooth (the teeth contiguous at base). Pronotum slightly transverse; base and apex subequal, widest at middle; sides feebly arcuate, unarmed; entire disk transversely rugose. Scutellum transverse, sides feebly arcuate, oblique, apex broadly rounded. Elytra gradually attenuate apically; apices each narrowly rounded; at extreme base with one or two transverse rows of coarse granules, from thence disk with well-separated, coarse punctures (which are more or less seriate) becoming smaller as they near apex; humeri prominent, angle with a large rounded tubercle. Antennae about two and one-half times body length, sixth segment surpassing elytral apex; scape cylindrical, feebly widened apically, coarsely, somewhat rugosely punctate basally on dorsal surface, beneath rugose, nearly attaining middle of pronotum; third segment about one-third longer than scape, cylindrical, straight; remaining segments slightly shorter and subequal except tenth which is distinctly longer than ninth, and the eleventh which is nearly two times length of tenth, and very slender.

Female. More robust; less attenuate; antennal tubercles distinctly separated, only very feebly armed apically; fifth sternite slightly longer than third and fourth together, at apex with a feeble transverse impression and a longitudinal impression from here to base; antennae about one-third longer than body, the seventh segment surpassing the elytral apex, all segments from fourth short, tenth and eleventh subequal.

Length 15.6–21.3 mm.; width 4.7–6.5 mm.

Holotype.—Male; Espirito Santo, E. Brazil; [A.N.S.P. 8247].

Allotype.—Female; topotypic; [A.N.S.P.].

Onocephala nodipennis Burmeister

1865. *Onocephala nodipennis* Burmeister, Stett. Ent. Zeit., XXVI, p. 181.

"Gray, strongly punctate; pronotum and elytra black variegated, latter at base with two rows of granules. Four lines long.

"Bahia Blanca, Argentine. Robustly built, ashy gray, thickly punctate. Pronotum uneven, with blackish vitta. Elytra with a blackish protuberance on the surface near scutellum and several smaller blackish protuberances behind the middle; sutural end shortly truncate, without spine." (Translation of the original description.)

Onocephala vittipennis Breuning

1940. *Perma vittipennis* Breuning, Fol. Zool. Hydrobiol., X, p. 185.

"Near to *P. aulica* Lucas but the antennae twice as long (♂) or one-third longer (♀) than body, first two segments densely fimbriate as well as third on basal half, rest to sixth segment always less densely fringed; genae only one-half longer than lower lobe of eye; front without carinae; apical end of elytra nearly without standing hairs, surface of elytra darker brown tomentose, on each elytron, besides sutural vitta, a broader one on disk which is closer to lateral edge, a narrow one on lateral edge, a broader one between discal and lateral ones and a third discal on inner margin of the broad discal. Length 13–16 mm.; width 4.5–5 mm.

"Male from Esperito Santo, Brazil, in British Museum." (A translation of the original description.)

STETHOPERMA Lameere

1885. *Stethoperma* Lameere, Ann. Soc. Ent. Belg., XXVIII, p. 94.

Distinguished principally by the prominent tubercle on mesosternum; head above nearly as long as the prothorax; front narrowed between eyes; elytra simply punctate basally; and antennae less densely fimbriate.

Elongate-ovate. Head above nearly as long as pronotum; front elongate, narrowed between eyes; genae elongate, vertical; eye with lower lobe about two-thirds height of gena, transverse; antennal tubercles prominent, subapproximate, dentate at apex. Pronotum transverse, feebly narrower at apex; disk finely rugose. Elytra gradually tapering to apices, which are separately rounded; base simply punctate; humeri prominent, with a distinct tubercle at apex. Prosternum simple; mesosternum with a broad, strongly produced tubercle. Legs short; procoxae globose, obtusely tuberculate in male; femora moderately robust, clavate. Antennae one and two-thirds times body length in male, one and one-third times in female, densely fimbriate beneath on first four segments, scape reaching well beyond middle of pronotum; third distinctly longer than scape; rest gradually shorter, eleventh slightly elongate in male.

GENOTYPE: *Stethoperma batesi* Lameere, herewith designated.

Key to Species *

1. Head, pronotum, and elytra at suture without a pubescent vitta; elytra each with a single, transverse, glabrous fascia at or behind middle preceded by a yellowish pubescent patch................2
   Head and pronotum with a median vitta; elytra with a sutural vitta, glabrous fascia, if present, strongly oblique, not preceded by a yellowish patch..4
2. Elytra entirely yellowish-gray pubescent, with numerous black glabrous maculae...**zikani**
   Elytra not as above...3
3. Mesosternal process directed slightly forward, prominent, its apex acute; elytra with glabrous fascia feebly oblique; abdomen dark reddish-brown.................................**obliquepicta**
   Mesosternal process vertical, right angular, less prominent; elytra with glabrous fascia transverse, straight; abdomen lighter brown than upper surface....................................**batesi**
4. Elytra with lateral discal vitta interrupted before middle by an oblique pubescent vitta, preceded and followed by glabrous vittae; antennae dark reddish-brown or fuscous; body beneath and legs dark reddish-brown.................................**multivittis**
   Elytra with lateral discal vitta with only a single glabrous interruption before middle; antennae medium reddish-brown; body beneath and legs light reddish-brown.......................**candezei**

Stethoperma candezei Lameere (Plate III, fig. 11.)

1885. *Stethoperma candezei* Lameere, Ann. Soc. Ent. Belg., XXVIII, p. 94. [Type locality, Brazil.]

Recognizable by the antennae having the first four segments reddish-brown, the remaining ones darker; the elytra with vitta over the humeri having two dentations on inner and outer margins, before middle base of disk finely, moderately punctate; pronotal disk feebly transversely rugose, the rugosities straight; and antennal tubercles well separated.

Male. Elongate-ovate, rather slender, subcylindrical, elytra subconvex; head and pronotum black, elytra deep olive-green. Head with grayish-fulvous pubescence as follows: A median vitta from occiput slightly narrowed to vertex, front with four rather narrow vittae, one either side of middle, and one along either lateral margin, genae each with a single narrow vitta and sides of head with two very narrow indistinct vittae. Pronotum with sparse fine, dark brown pubescence, medially with moderately wide vitta of grayish-fulvous pubescence. Scutellum entirely covered with gray-fulvous pubescence. Elytra glabrous except for the heavily pubescent deep

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* It was impossible to include *flavovittata* in this key because of the unsatisfactory state of the original description.

fulvous vittae as follows: A common sutural one which becomes attenuate apically, a wider one from humerus to apex, which has two dentations on both inner and outer margins before middle, and a very narrow, thinly pubescent one along extreme lateral edge from humerus, each puncture bearing a short dark brown seta. Beneath pale reddish-brown, densely clothed with pale grayish-fulvous pubescence; abdomen with a rather broad, median glabrous vitta. Legs except the basal two-thirds of tibiae (which are greenish) pale reddish-brown, entirely thinly deep fulvous pubescent. Antennae with segments one to four dark reddish-brown, from fifth piceous; scape at extreme base with very thin, pale grayish-fulvous pubescence; scape, third and fourth segments with very dense, fifth, sixth, and seventh with very sparse, black fimbriation on ventral surface.

Head above finely alutaceous, with a median impressed line from occiput to near epistoma; front elongate, very feebly narrowed between eyes, sides nearly parallel, a few coarse deep punctures between eyes; genae very elongate; eye with lower lobe small, transversely oval, slightly more than half genal height; antennal tubercles prominent, well separated, armed at apex with a short, robust tooth. Pronotum transverse; base very slightly wider than apex; sides nearly straight, unarmed; disk feebly transversely rugose, with a deep sulcus basally at middle. Scutellum transverse; sides straight, apex broadly arcuate. Elytra distinctly attenuate apically; apices each rather narrowly rounded; base with few coarse, shallow punctures, to middle these become finer and shallower, behind middle much finer and sparser; with two or three feeble costae behind middle; humeri prominent, angle with a large, black, rounded tubercle. Mesosternum at angle with a large rounded tubercle which occupies nearly all of the angle and the process; process at apex very deeply emarginate; fifth sternite broadly rounded at apex, also with a deep transverse sulcus there. Antennae one and one-half times body length; scape attaining base of pronotum, cylindrical, feebly widened apically, basal quarter with sparse, coarse punctures; third segment cylindrical, straight, slightly longer than scape, fourth slightly shorter than third; remaining segments much shorter than fourth but subequal to each other; eleventh slightly longer than tenth.

Length 17 mm.; width 5 mm.

Distribution.—Southeastern Brazil.

BRAZIL: ♂, Theresopolis, S. Catharina; (Fruhstorfer); [A.N.S.P.].

Stethoperma multivittis Bates (Plate III, fig. 12.)

1884. *Stethoperma multivittis* Bates, Ent. Monthly Mag., XXIV, p. 63. [Type locality, Minas Geraes.]

In this species, the elytra have the humeral vitta broken by a short oblique vitta of the same color just before middle; the base of disk with coarser and fewer punctures than in *candezei;* the antennae are piceous throughout their full length; and the antennal tubercles are subcontiguous.

Male. Elongate-ovate, rather slender, cylindrical; olive-black, with bright fulvous pubescent markings, some of which have a greenish sheen, as follows: Head with a double vitta above and with four vertical vittae on front, one on each gena, and three on sides. Pronotum with a broad median vitta, the side margins of which gradually merge into pubescence covering remainder of disk. Scutellum entirely pubescent. Elytra each with five vittae, one on entire length of suture, one near suture from base to near apex, fine, indistinct, another one broad from base near humerus, partially interrupted and strongly constricted before middle by a short, oblique vitta, then narrow to apical third, and fifth vitta from middle to apex, broad, the dark lines largely brown pubescent; on sides one or two additional fine fulvous vittae behind middle; elytra bright pale green beneath. Body beneath dark reddish-brown, covered with bright fulvous pubescence; abdomen with a large triangular glabrous macula on middle of each sternite. Legs reddish-brown, bases of femora and most of tibiae olive-black, bright fulvous pubescent. Antennae entirely fuscous, distal segments very feebly paler; beneath a rather broad dense fringe of black hairs on first three segments, fourth to seventh segments narrowly and sparsely fimbriate.

Head with an elevated median line from occiput to epistoma; front elongate, narrow, nearly twice as high as wide, surface minutely alutaceous, the glabrous lines feebly elevated; genae minutely alutaceous, and finely, sparsely punctate; eye with lower lobe feebly transverse, about two-thirds as tall as gena; antennal tubercles prominent, robust, subapproximate, at apex armed with a short tooth. Pronotum transverse, cylindrical, a little narrower at apex than at base; disk coarsely, feebly, transversely rugose, at middle of base a deep short sulcus. Elytra gradually tapering to apices, which are separately narrowly rounded; disk sparsely, not very coarsely punctate at base, punctures gradually finer to middle where they become obsolete, each disk with two or three broad costae on apical half; humeri coarsely punctate, slightly prominent, anterior margin feebly arcuate, angle with a small tubercle. Mesosternum broadly, deeply emarginate at apex, the large tubercle projecting strongly downward and slightly forward; fifth sternite with a fine median line, a long, triangular, feebly impressed area at middle before apex, caudally impressed with several rounded more deeply impressed places. Procoxae tuberculate. Antennae nearly twice body length, the sixth segment surpassing elytral apex; scape slender, elongate, nearly attaining base of pronotum, cylindrical; third segment one-fourth again as long as first, rest short (wanting from ninth).

Length 18 mm.; width 5.3 mm.

Distribution.—Southeastern Brazil.

Brazil: ♂; Espirito Santo; [A.N.S.P.].

Stethoperma obliquepicta Breuning (Plate III, fig. 10.)

1940. *Stethoperma obliquepicta* Breuning, Fol. Zool. Hydrobiol., x, p. 185.

This and the following species differ from the preceding two in having a single transverse glabrous fascia near middle of elytra. In the present form this fascia is slightly oblique. Moreover, the elytral punctation is confined to a sutural band and a few on humeri, the antennae are more heavily fimbriate on the first four segments, and the pronotum is more distinctly rugose.

Female. Elongate-ovate, moderately robust, cylindrical, elytra subconvex; black or dark olive-green. Head and pronotum densely covered with a brassy green pubescence, the single hairs lying transversely. Elytra and scutellum with dense grayish-yellow pubescence, this pubescence thin on humeri and in a common sutural vitta which is widest at base, at middle a transverse glabrous band which is distinctly oblique from sides to suture; the sutural vitta, humeri and apical half have large glabrous punctures which give the appearance of the elytra being mottled in those areas. Beneath dark reddish-brown, shining, laterally broadly grayish-yellow pubescent except last sternite which is entirely pubescent but more thinly so medially. Legs piceous, grayish-yellow pubescent. Antennae reddish-brown or testaceous, thinly grayish-yellow pubescent.

Head above with an impressed median line from occiput to near epistoma; front convex, slightly elongate, feebly narrowed above and below lower margin of eyes; genae elongate, narrow; eye with lower lobe small, broadly ovate, only about half length of gena; antennal tubercles prominent, widely separated, feebly, obtusely produced at apex. Pronotum distinctly transverse, base and apex subequal, sides nearly straight, unarmed; only a basal sulcus present, this shallow and confined to middle; surface indistinctly transversely rugose medially and with scattered, coarse punctures. Scutellum strongly transverse. Elytra with sides nearly straight, gradually attenuate apically; apices separately and narrowly rounded. Surface with coarse punctures along sutural vitta, humeri and transverse glabrous fascia; humeri prominent, angle obtusely tubercled. Prosternum narrow, gradually widened basally; mesosternum produced into a strong, subtruncate process anteriorly, which is directed slightly anteriorly and downward; fifth sternite elongate, apical margin feebly emarginate and surface triangularly impressed medially. Procoxae globose; femora robust, gradually clavate, profemora more gradually clavate. Antennae from one and one-half to one and one-third times body length; scape cylindrical, slightly wider apically; third straight, nearly half again as long as scape, remaining segments much shorter, eleventh slightly longer than tenth; fimbriate to ninth or tenth segment, very heavily on scape, third and fourth.

Length 6.5–8 mm.; width 3.7–4 mm.

BRAZIL: 3 ♀; Hansa Humboldt, Santa Catharina, November 1939–40. 1 ♀; Mafra, Santa Catharina, April 1939. [L. Lacey.]

Stethoperma batesi Lameere (Plate III, fig. 9.)

1885. *Stethoperma batesi* Lameere, Ann. Soc. Ent. Belg., XXVIII, p. 94. [Type locality, Rio de Janeiro.]

From the last species this is distinct in its smaller size, the elytra with the glabrous band not oblique but directly transverse, the punctation evenly distributed over base; the antennae less densely fimbriate; and the pronotum is nearly smooth, the rugosities very feeble.

Male. Elongate-oblong, rather robust, cylindrical, elytra subconvex; dark reddish-brown. Head, pronotum, and elytra with dense greenish-yellow pubescence, that on head and pronotum lying transversely. Scutellum thinly covered with same pubescence. Elytra with numerous glabrous punctures in a broad vitta at suture and on basal two-fifths, and scattered over apical half; at middle a narrow, glabrous, transverse fascia which is not oblique. Beneath light reddish-brown (almost testaceous) broadly vittate laterally with grayish-yellow pubescence, medially sterna and sternites glabrous. Legs reddish-brown clothed with grayish or greenish-yellow pubescence. Antennae same surface color as body beneath, with very thin, fine, gray pubescence.

Head above with very fine punctures, a median impressed line from occiput to near epistoma; front feebly elongate, convex, very slightly narrowed above and below lower margin of eyes, surface alutaceous; genae very elongate, slightly widened below; eye with lower lobe transversely, broadly ovate, less than half gena in height; antennal tubercles prominent, well-separated, strongly dentate at apex. Pronotum transverse; base and apex subequal, sides nearly straight, unarmed; only basal sulcus present and that at middle; entire surface with moderate punctures. Scutellum transverse, sides and apex broadly arcuate. Elytra with sides nearly straight, feebly attenuate apically, apices separately, rather narrowly rounded; basal two-fifths and from middle to apex with coarse well-spaced punctures; humeri slightly prominent, angle with a very feeble obtuse tubercle. Prosternum narrow, gradually widened behind; mesosternum produced anteriorly, the process forming a right angle, when viewed from side; fifth sternite slightly longer than fourth, apical margin subtruncate. Procoxae globose, with a distinct obtuse tubercle on inner side; femora robust, clavate, profemora more robust and less clavate, finely rugose basally; protarsi dilated. Antennae over two times body length; scape cylindrical constricted at extreme base; third straight, about one-third longer than scape; remaining segments gradually shorter except eleventh which is about one-half longer than tenth; fimbriate on first to sixth, most heavily on first, third, and fourth.

Female. Slightly more robust; elytra less attenuate apically; prosternum slightly wider; fifth sternite triangularly impressed apically; procoxae only very feebly tubercled; profemora less robust and not rugose basally; antennae about one and one-half to one and two-thirds times body length, eleventh segment only very slightly longer than tenth.

Length 6.2–7 mm.; width 3–3.5 mm.

Distribution.—Southeastern Brazil.

BRAZIL: 1 ♂, 3 ♀; Rio de Janeiro, October–November; [C.M.].

Stethoperma zikani Melzer (Plate III, fig. 13.)

1923. *Stethoperma zikani* Melzer, Not. Prelim. Mus. Paulista, II, (5), p. 8; Rev. Mus. Paulista, XV, 1927, p. 200, pl. 7, fig. 20.

"Brown-black, elytra rufescent, yellowish-gray pubescent; antennae and abdomen at middle denuded, elytra with numerous, irregular, denuded points. Head elongate, covered with yellowish-gray pubescence, on front three, on vertex one, and above three, denuded lines; antennal tubercles strongly contiguous, internally produced into erect lobes; eyes small, minutely granulated, strongly incised; genae elongate; antennae in male twice length of body, in female surpassing abdominal apex, beneath at base ciliate. Prothorax subcylindrical, not longer than wide, sides straight, not tuberculate, above with black, impressed, scattered points. Scutellum rounded apically. Elytra at base broader than thorax and squarely truncate, from humeri to apices attenuate, apices together rounded; humeri glabrous, shining, distinctly produced; irregularly punctate. Legs short; femora thickened; procoxal cavities closed behind, middle coxal cavities externally open. Prosternal process narrow; mesosternal process broader, anteriorly abruptly declivous. Length 10–11.5 mm.; width 3–3.25 mm. Male, female from Passa Quatro, Sul de Minas, Brazil.

"This is the fourth species of the genus, all from Brazil, and easily distinguished by the color and punctation." (A translation of the original description.)

Remarks.—This species was left in *Stethoperma* because of the declivous mesosternum, which indicates a probable processing of this structure; also the figure distinctly shows a separate rounding of each elytral apex instead of being together rounded, as stated in the description.

The figure is a copy of the original.

Stethoperma flavovittata Breuning

1940. *Stethoperma flavovittata* Breuning, Fol. Zool. Hydrobiol., x, p. 186

"Near *multivittis* Bates, but the antennae are three-quarters longer than the body, the first four segments very thickly fringed; on each elytron are four yellow discal vittae (the third one of which runs from the humeri) which are much broader than the rest; mesosternal tubercle broader, produced forward and more strongly ventrad. Length 14 mm.; width 4.5 mm. Type from Salabro, Bahia, Brazil, in Museum of Paris." (A translation of the original description.)

PSEUDOPERMA new genus

From *Stethoperma,* this genus is at once distinct in the head being much shorter above than pronotum; antennal tubercles widely separated and very feebly elevated; front subquadrate; eye with lower lobe transverse; antennae shorter, in female only equal to body length, scape and third segment subèqual in length, segments from fourth much shortened; mesosternal tubercle feebly elevated; and the femora more robust.

Elongate-ovate, robust. Head above short, distinctly shorter than pronotum; front subquadrate, sides straight; genae elongate, vertical; eye with lower lobe transverse, two-thirds as tall as gena; antennal tubercles feeble, well separated, very briefly dentate at apex in female (male unknown). Pronotum transverse, slightly tapering apically. Elytra with sides gradually attenuate to apices, which are separately rounded; base finely, sparsely punctate; humeri rounded, with a large tubercle at angle. Prosternum simple; mesosternum at apex feebly emarginate, its tubercle broad, not strongly elevated. Legs rather short; procoxae globose; femora robust, clavate. Antennae in female only very feebly longer than body, sparsely fimbriate on first four segments; scape cylindrical, reaching beyond middle of pronotum; third segment subequal in length to first, straight; remaining segments distinctly shorter.

GENOTYPE: *Perma chalcogramma* Bates.

Key to Species

Elytra each with seven fine pale vittae; pronotum unicolorous. **chalcogramma**

Elytra with a distinct yellowish-white sutural vitta, laterally with several interrupted indistinct vittae; pronotum with a distinct median vitta.. .... **patruelis**

Pseudoperma chalcogramma Bates (Plate III, fig. 14)

1884. *Perma chalcogramma* Bates, Ent. Month. Mag., XXIV, p. 63. [Type locality, Rio de Janeiro.]

Distinct in the elytra having seven fulvous vittae on each disk, the vittae separated by dark green, elevated, glabrous lines of equal width and the pronotum densely uniformly fulvous pubescent.

Female. Elongate-ovate, rather robust, cylindrical; above and below fuscous or nearly so, covered with fulvous pubescence. Head with a glabrous vitta on gena and on sides. Pronotum with a small round glabrous macula each side of disk at middle. Elytra with surface greenish (on undersurface bright green), each with seven fine vittae of fulvous pubescence, the interstices glabrous and elevated. Abdomen more or less glabrous medially, the glabrous area broad basally, gradually narrowing caudad, just attaining base of fifth sternite. Legs dark reddish-brown, sparsely covered with fulvous pubescence; tarsi and apices of tibiae testaceous, fulvous pubescent. Antennae testaceous, except scape, which is dull fuscous; entirely clothed with sparse fulvous pubescence; on lower surface with a comparatively sparse fimbriation on first six segments.

Head with a fine median line from occiput to epistoma; front and genae with a few fine punctures; antennal tubercles feeble, well separated, briefly dentate at apex. Pronotum transverse, subconical, apex distinctly narrower than base, sides straight, unarmed; disk with a number of indistinct transverse rugosities, entire surface finely, sparsely punctate. Elytra with sides gradually attenuate to apices, which are separately rounded; disk on basal half finely, rather densely punctate, behind middle punctures suddenly finer and shallow; humeri feebly prominent, anterior margin rounded, angle with small, indistinct tubercle. Mesosternal tubercle broad, projecting forward only; fifth sternite planate medially, a small, rather deep fovea at middle near apex. Antennae as long as body, with a narrow, sparse fringe on first six or seven segments; scape attaining middle of pronotum, slender, cylindrical; third segment as long as first, rest gradually shorter.

Length 17 mm.; width 5.6 mm.

Distribution.—Southeastern Brazil.

BRAZIL: ♀; no locality data; [A.N.S.P.].

Pseudoperma patruelis Breuning (Plate III, fig. 15.)

1940. *Stethoperma patruelis* Breuning, Fol. Zool. Hydro., x, p. 186. [Type locality, Brazil.]

Distinguishable by the striking yellowish-white sutural vitta of the elytra; on the sides of elytra are a number of fine vittae, some attaining apex, others interrupted or coalescent; and pronotum with a distinct median vitta.

Female. Elongate-ovate, rather robust, subcylindrical; elytra subconvex; head and pronotum piceous, elytra dark brown, apices slightly paler. Head and pronotum grayish-fulvous pubescent; front with a narrow, median glabrous vitta. Pronotum medially with a broad indistinct vitta of condensed pubescence. Scutellum yellowish-white pubescent. Elytra with a common, dense, yellowish-white sutural vitta which becomes attenuate apically; from humeral region radiate many, narrow, grayish-fulvous vittae which are irregular, some becoming coalesced before apex and others attaining apex. Beneath dark reddish-brown, grayish-yellow pubescent; abdomen medially with a broad glabrous vitta, which is almost absent on fifth sternite. Legs reddish-brown, claw segment slightly paler, rather densely grayish-yellow pubescent. Antennae with scape dark reddish-brown, from third segment pale reddish-brown or nearly testaceous; thinly clothed with grayish-yellow pubescence; scape and third segment with dense, fourth and fifth with slight, dark brown fimbriation on ventral surface.

Head above alutaceous, with a median impressed line from occiput to epistoma; front feebly elongate, sides straight, narrowing below, surface finely densely punctate; genae elongate, finely, densely punctate, and with scattered coarse punctures; eye with lower lobe transverse (nearly oblong), about half genal height; antennal tubercles feeble, not armed at apex. Pronotum transverse; base feebly wider than apex; sides straight, unarmed; disk feebly transversely rugose with a deep sulcus basally. Scutellum transverse; sides straight, very feebly oblique, apex broadly rounded. Elytra gradually attenuate to apices which are separately rounded; base with coarse, shallow, well-spaced punctures, towards apex these become smaller; humeri prominent, angle with a large, obtuse tubercle. Mesosternal angle with a small, obtuse tubercle, apex of mesosternal process broadly emarginate; fifth sternite with apical margin bilobedly emarginate, surface at apex flattened and punctate (this covers a greater portion of the sternite). Procoxae with a feeble, obtuse tubercle anteriorly. Antennae as long as body; scape about two-thirds length of pronotum, cylindrical, of equal width throughout its length; third segment cylindrical, straight, slightly shorter than scape; from fourth segments much shortened and gradually smaller; tenth and eleventh subequal in length, eleventh spindle-shaped.

Length 14.5 mm.; width 4.7 mm.

Distribution.—Southeastern Brazil.

BRAZIL: ♀; no locality data; [A.N.S.P.].

EXPLANATION OF FIGURES

PLATE III

Fig. 1.—*Onocephala diophthalma* Perty ♂ × 2.5.
Fig. 2.—*Onocephala aulica* Lucas ♂ × 2.5.
Fig. 3.—*Onocephala lineola* new species ♂ × 2.5.
Fig. 4.—*Onocephala tepahi* new species ♂ × 3.5.
Fig. 5.—*Onocephala obliquata* Lacordaire ♂ × 3.
Fig. 6.—*Onocephala suturalis* Bates ♀ × 3.
Fig. 7.—*Onocephala lacordairei* new species ♀ × 3.3.
Fig. 8.—*Onocephala thomsoni* new species ♂ × 4.
Fig. 9.—*Stethoperma batesi* Lameere ♂ × 4.3.
Fig. 10.—*Stethoperma obliquepicta* Breuning ♀ × 3.5.
Fig. 11.—*Stethoperma candezei* Lameere ♂ × 3.
Fig. 12.—*Stethoperma multivittis* Bates ♂ × 2.8.
Fig. 13.—*Stethoperma zikani* Melzer ♂ × 5.
Fig. 14.—*Pseudoperma chalcogramma* Bates ♀ × 3.
Fig. 15.—*Pseudoperma patruelis* Breuning ♀ × 3.5.

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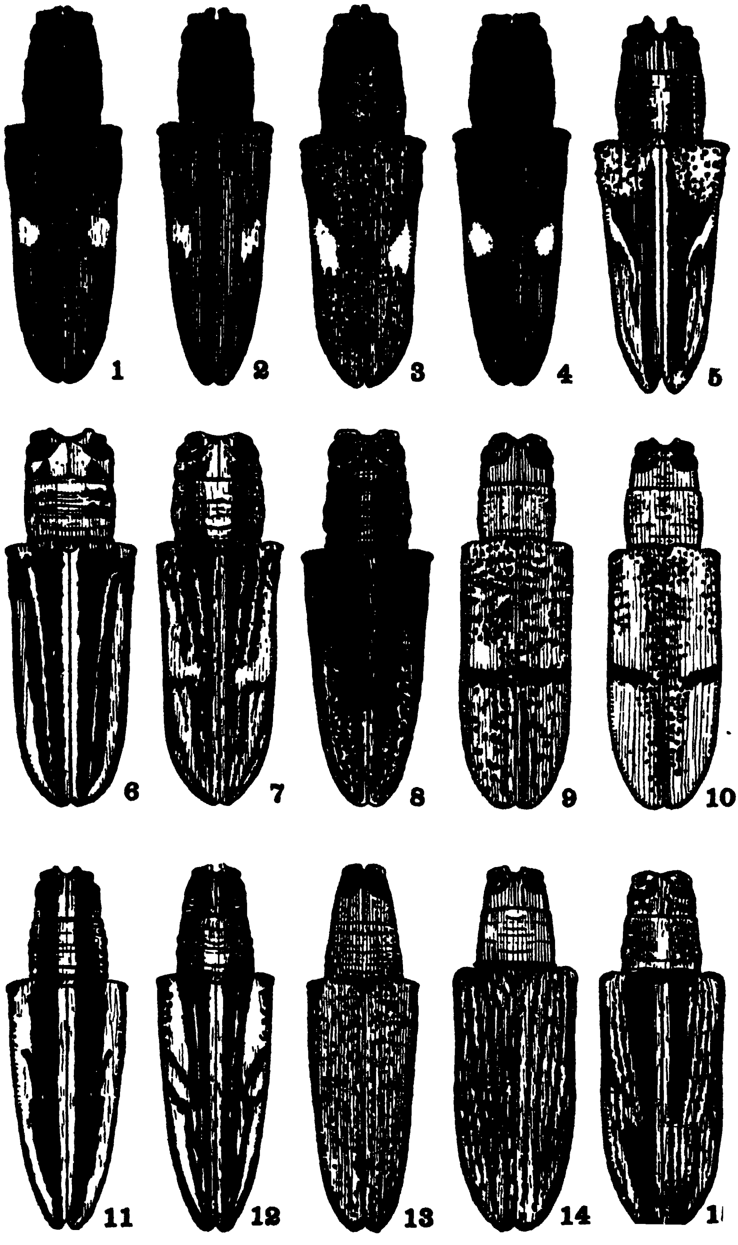
Pages 27–48. May 31, 1946.



DILLON AND DILLON—REVIEW OF ONOCEPHALINI

STUDIES IN THE SCARABAEIDAE III[1]

(COLEOPTERA)

BY MARK ROBINSON

Springfield, Pennsylvania

Discussed in this paper are eleven new species belonging to five different genera of Scarabaeidae. The types of all the species, unless otherwise mentioned, are in the collection of the author, and certain paratypes have been placed in that of the Academy of Natural Sciences of Philadelphia.

Canthon assimilis new species

The nearest associate to this large *Canthon* is perhaps *gagatinus* Harold but the latter species has a smooth surface and lacks the local smooth areas which this species has scattered over it. In addition the male genitalia of the two forms are entirely different.

Barely convex, orbicular; subopaque; black, tarsi and tibial spurs 'dark reddish.

Anterior edge of clypeus reflexed; medially triangularly emarginate, the angles on each side bluntly produced; sides from front angles to the genae sinuate. A raised, fimbriate line is just behind the anterior edge of the clypeus. Genae at the clypeogenal suture rounded outwardly. Surface of clypeus scabriculo-granulate; frons granulate, finely, shallowly, sparsely punctured.

Anterior angles of pronotum acute; sides sinuate to median angles then arcuate to acute hind angles. Base emarginate near the hind angles; there is just a trace of a median lobe. Surface of pronotum granulate; finely, sparsely punctured. These punctures are separated from about six to ten times their diameter. Scattered among these punctures are smooth areas where the tops of the grains seem to be flattened. Thoracic tubercule below the lateral margin well indicated.

Elytral striae fine, shallow. Scutellar impression barely noticeable. At the base of the elytrons between the second and third and between the fourth and fifth striae there is a small, shining knob. Surface of elytra the same as on the pronotum.

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[1] (I) Trans. Amer. Ent. Soc., LXIV, pp. 107–115, 1938. (II) Trans. Amer. Ent. Soc., LXVI, pp. 141–159, 1940.

Surface of pygidium the same as on the pronotum. Anterior tibiae tridentate, crenate between the teeth and above the third tooth. Spur truncate or slightly sinuate at the apex, wider at the apex than at the base. Posterior tibiae with one spur. Surface of underside as on the pronotum except for a few coarse punctures on the middle femora.

Length, 15 mm.; breadth, 8.8 mm.

Type.—♂; Compostela, Nayarit, Mexico; 1936 (A. Maas).

Paratypes.—27, with the same data as the type.

Aphodius subcarinatus new species

The denticulate clypeus and the raised edges of the elytral striae will serve to distinguish this species from its nearest ally *rubidus* Leconte.

Oblong, convex; shining; reddish, antennae and abdomen lighter, legs a little darker in color. Sides of clypeus, genae, pronotum and elytra fimbriate with short yellowish hairs.

Clypeus broadly, shallowly emarginate with the angles on each side produced into small denticles, sides rounded. Genae broadly rounded, not prominent. There is a raised area leading back from each denticle on the surface of the clypeus. Surface moderately closely punctate, the punctures variable in size. There is a slight depression on either side of the vertex.

Pronotum two-thirds as long as it is wide; sides evenly arcuate, both front and hind angles are well rounded. Basal marginal line obliterated on each side near the hind angles. Coarse punctures separated by about one half their diameters on the sides to about two or three times their diameter on the disk, fine punctures intermixed.

Elytra nearly parallel; humeri obtuse. Striae shallow, weakly, crenately punctured. Intervals barely convex with a slightly raised ridge or carina at each edge of the striae; finely biseriately punctured. Intervals two to five inclusive, tapering near the base.

Mesosternum not carinate between the coxae. Metasternum depressed, finely punctured, punctures near the sides coarser and each bearing a yellowish hair. Abdomen alutaceous with a few hair-bearing punctures. Anterior tibiae smooth in front; tridentate, crenate above the third tooth. First joint of tarsi shorter than the second. Middle and posterior tibiae fimbriate at the apex with unequal spinules. First joint of hind tarsi not as long as the next three together.

Male. Spur of anterior tibiae acuminate, down turned at the extreme tip. Short spur of the middle tibiae half as long as the long spur; apical half slightly turned inward; extreme tip acute, abruptly turned inwards.

Length, 8.15 mm.; breadth, 3.75 mm.

Type.—♂; Zions Canon, Utah; (D. Elmo Hardy).

Aphodius cressoni new species

This new and large species of *Aphodius* is named for E. T. Cresson Jr. as a slight token for the great assistance he has given in helping to further my studies in the *Coleoptera.*

Aphodius cressoni is allied to *concavus* Say but can be distinguished from the latter species by the greater number of large punctures on the pronotum, the larger size and the shape of the short spur of the middle tibiae in the male which is truncate at the tip in *concavus.*

Elongate-subovate; reddish-brown, legs and abdomen a little lighter in color; setae yellowish; shining.

Clypeus shallowly emarginate, the angles on each side subacute, edge narrowly raised. Edge fimbriate except medial emargination. Genae moderately prominent, well rounded. Surface of head smooth, the fine punctures sparse, separated from four to five times their diameter. On either side of the frons there are eight or nine punctures with a diameter about three times the diameter of the fine punctures. About the eyes and along the posterior portion of the head are scattered other coarse punctures.

Pronotum three-fourths as long as wide, margin fimbriate. Sides parallel in posterior half, gradually converging anteriorly. Hind angles broadly rounded; base sinuate. Fine marginal line interrupted each side of the broadly rounded median lobe. Disk moderately convex; fine punctures about as thinly distributed as on the head; they are a little smaller in diameter. Coarse punctures irregularly disposed, separated by about their diameter to twice their diameter near the sides, sparse near the center with a rounded median area impunctate.

Humeri of elytra obtuse; sides weakly arcuate. Striae rather deep; shallowly, slightly crenately punctured. Intervals barely convex; punctures about the size and frequency of the fine punctures on the pronotum.

Mesosternum not carinate. Metasternum finely punctured, with an irregular, broad V at the posterior coxae of coarse, setigerous punctures. These punctures are more numerous in the male. Sides of metasternum coarsely, sparsely, setigerously punctured. Abdomen finely punctured, these punctures bear a long, decumbent hair. Anterior tibiae tridentate, not crenate above the third tooth; smooth on the anterior face. Middle and posterior femora finely punctured, each with a short row of coarse setigerous punctures. Middle and posterior tibiae fimbriate at the apex with long, unequal spinules. First joint of hind tarsi equal in length to next three together.

Male. Spur of anterior tibiae evenly bent downwards, not quite as long as the first two anterior tarsal joints. Short spur of middle tibiae a little less than half the length of the long spur, widest at the middle, gradually tapering to the tip which is slightly bent inwards. Metasternum slightly concave in the center.

Female. Spur of anterior tibiae straight in basal half then slightly bent downwards, about as long as the first two anterior tarsal joints. Short spur of middle tibiae a little more than half the length of the long spur, slender, acute to the tip. Metasternum flat in the center.

Length, 9 mm.; breadth, 4.5 mm.

Type.—♂; Nebraska.

Allotype.—♀; Nebraska.

Aphodius (Platyderides) yavapai new species

This species has been confused with *marginatus* Leconte but can readily be distinguished by the lesser number of coarse punctures on the pronotum and the fact that the fine punctures on the head, pronotum and elytra in *marginatus* are all the same size. Another excellent means of determining this species from Leconte's is by the side margins of the pronotum which in *marginatus* are parallel in the posterior half while in the anterior half are gradually converging. The side margins of the pronotum are also more strongly explanate in the latter species.

Oblong, moderately convex; shining; elytra, sides of pronotum, clypeus and tibiae reddish-brown. Femora and apex of abdomen a little lighter in color; disk of pronotum, head and underside of thorax a very dark red, almost black.

Clypeus broadly, moderately emarginate with the angles on each side broadly rounded. The entire edge is narrowly reflexed, slightly more so at the angles. Genae fairly prominent; fimbriate. Surface of clypeus rugulose with a few intermixed fine punctures. Frons with a transverse, small tubercule on each side; surface moderately, finely punctured, the punctures a little less densely placed on the disk.

Pronotum five-sevenths as long as it is wide; sides explanate, evenly arcuate, converging in front to rather well rounded angles. Hind angles broadly rounded outlining a well defined depression. Base of pronotum medially, broadly, strongly lobed; without basal marginal line. Coarse punctures of pronotum irregularly placed, separated from one half to three times their diameter on the sides to just a few isolated punctures on the disk. The fine punctures are about half the diameter of those on the head and are scattered moderately and evenly over the entire surface.

Elytra nearly parallel; humeri obtuse. The thin striations finely, crenately punctured. Intervals barely convex, finely punctured, the punctures a little larger in diameter than those on the pronotum; surface minutely alutaceous. The last three intervals on each side with a few transverse wrinkles.

Mesosternum not carinate. Metasternum alutaceous, with a few scattered coarse punctures in the center; laterally these punctures are denser. Most of the metasternal punctures bear a long yellowish seta. The rather densely placed abdominal punctures also bear a long yellowish seta. Anterior tibiae with a row of punctures on the inner side of the anterior face; tridentate; faintly crenate above the third tooth. First joint of tarsi longer than the second. Middle and posterior tibiae fimbriate at the apex with unequal spinules. First joint of hind tarsi nearly as long as the next three together.

Male. Spur of the anterior tibiae long, nearly parallel, curved downwards, truncate at the tip. (This truncate condition may be caused by wear.) Short spur of the middle tibiae is less than one half as long as the long spur; curved inwards, with the inner angle of the truncated tip prolonged inwards. Middle and posterior femora and trochanter with densely placed yellow hair bearing punctures on the inner, posterior face.

Length, 7.7 mm.; breadth, 3.7 mm.

Type.—♂; Prescott, Yavapai County, Arizona.

Aphodius oviformis new species

This species keys to *nevadensis* Horn in Saylor's [2] key to the *cadaverinus* group of *Aphodius*. It can be distinguished by the more ovate form of the elytra and the fact that the large punctures on the pronotum are not nearly as large as they are in *nevadensis*. In addition to the above the elytral intervals are more convex in *oviformis* and the punctures on the elytral striae are denser and finer.

Elongate-oval; piceocastaneous above, reddish-brown beneath; apterous.

Clypeus evenly moderately emarginate, the angles on each side with a well-developed denticle; genae pronounced, rather sharply rounded. Surface of clypeus rugose, vertex covered with moderate sized punctures which are rather closely set.

Sides of pronotum evenly arcuate, distinctly narrowed behind; basal marginal line obliterated near the hind angles which are virtually obsolete. Moderate punctures of the pronotum very sparse all over except in the anteromedial area where they are obsolete; the fine punctures are moderately, evenly placed over the entire surface, these punctures are about the same size as those on the elytral intervals.

Elytra noticeably ovate in outline; humeri rounded. Striae fine; crenately punctured. The first elytral interval but a little narrower than the second. Intervals slightly convex; finely punctured, the punctures arranged biseriately.

Mesosternum with a long, well-defined carina. Metasternum evenly, finely punctured, the punctures are coarser near the sides. Abdomen alutaceous, finely punctured. Anterior tibiae stout, tridentate, smooth above the third tooth. Anterior face of tibiae with a few fine punctures. First joint of tarsi slightly longer than the second joint. Posterior face of anterior femora with a few fine punctures. Apex of middle and hind tibiae fimbriate with short equal spinules. First joint of hind tarsi slightly longer than the long spur.

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[2] Proc. of the Biol. Soc. of Washington, LIII, p. 99, 1940.

Length, 7 mm.; breadth, 2.85 mm.

Female. Spur of anterior tibiae parallel, acute, bent inwards and downwards near the tip. Short spur of middle tibiae about one half as long as the long spur, acute.

Type.—♀; Kern County, California.

Aphodius constrictus new species

This species will key to *washtucna* Rob. in Saylor's[3] key to the *cadaverinus* group of *Aphodius* but can be distinguished by the crenately punctured elytral striae, in addition to other less easily determined characters. These characters are the fimbria at the apex of the middle and hind tibiae which in *washtucna* are shorter than in this species; in addition the short spur of the male's middle tibiae in *washtucna* is a little longer than in *constrictus*.

Elongate-ovate, stout; constricted in the middle; piceocastaneous above, lighter beneath; apterous.

Clypeus evenly, rather deeply emarginate, the angles on each side narrowly rounded; genae not pronounced, broadly rounded. Surface of clypeus rugose which blends into moderate punctures on the vertex, on each side basally there are some coarse punctures intermixed.

Sides of pronotum distinctly narrowed behind; basal marginal line barely discernible at the middle, obliterated near the hind angles which are broadly rounded. Coarse punctures of pronotum separated from one to three times their diameters near the sides, sparser on the disk; the fine punctures are very evenly, moderately distributed over the entire surface and are about the same size and density as those on the elytral intervals.

Elytra ovate; humeri rounded. Striae fine; sparsely, crenately punctured. Intervals nearly evenly convex but a little higher in the center; finely and evenly punctured.

Mesosternum with a long distinct carina. Metasternum finely, evenly punctured, the punctures becoming coarser near the sides. Abdomen alutaceous, finely punctured and longitudinally wrinkled. Anterior tibiae stout, tridentate, smooth above the third tooth; first joint of tarsi longer than second joint. Underside of anterior femora coarsely and densely punctured. Middle and posterior femora with a few yellow hair-bearing, coarse punctures near the knee. Spinules at apex of the hind tibiae are even in length. First joint of hind tarsi a little longer than the long spur.

Length, 7.9 to 8.5 mm.; breadth, 3.75 to 3.9 mm.

Male. Spur of anterior tibiae stout, acute, bent downwards and inwards near the tip. Short spur of middle tibiae about one third as long as the long spur; truncate at the tip, slightly prolonged at the inner angle.

Female. Spur of anterior tibiae parallel, not stout, acute, bent downwards and inwards. Short spur of middle tibiae about one half as long as the long spur, acute at the tip.

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[3] Proc. of the Biol. Soc. of Washington, LIII, p. 99, 1940.

Type.—♂; Pullman, Whitman County, Washington; November 19, 1910.

Allotype.—♀; Pullman, Whitman County, Washington.

Aphodius piceatus new species

This insect is closely related to *Aphodius anthacinus* Lec. but can be distinguished by its more convex form; the hind angles of the pronotum are a little sharper than in *anthacinus;* the elytral striae of *piceatus* are narrower and not so deeply punctate. In case of question the court of last resort to distinguish these species is the male genitalia which in *piceatus* has the claspers equilateral triangular in outline while the claspers in *anthacinus* are elongated and down turned at the tip.

Moderately elongate, convex; a little wider posteriorly. Color black, underparts piceous, tarsi reddish; shining.

Clypeus moderately emarginate, the angles on each side rounded; sides straight. Genae not very prominent; rounded. Frons transversely tritaberculate. Surface of head moderately punctate, these punctures are separated from one to three times their diameter. A few wrinkles near the sides and in front. Genae and sides of pronotum fimbriate.

Sides of pronotum nearly straight in posterior half, converging in front; hind angles well rounded; base of pronotum sinuate each side of median lobe; marginal line entire. Punctures on disk intermixed, more densely placed near the sides; the small punctures about the size of the punctures on the head.

Elytral striae moderately deep, sides of striae crenate because of shallow strial punctures. Intervals slightly convex; barely alutaceous; irregularly, biseriately punctured; ninth and tenth intervals slightly, transversely wrinkled.

Mesosternum not carinate between the coxae. Metasternum punctured finely and sparsely medially; laterally the punctures are larger and more numerous. Abdomen finely punctured, each puncture bearing a yellowish hair. Middle and posterior femora with a few scattered fine punctures and a few hair-bearing coarse punctures near the posterior edge. Anterior tibiae strongly tridentate, denticulate above the third tooth; anterior face smooth. Apex of middle and posterior tibiae fimbriate with spinules of equal length. First joint of posterior tarsi about equal in length to the next three joints combined.

Length, 6.5 mm.; breadth, 3.3 mm.

Male. Spur of anterior tibiae stout, gradually down curved, acute to tip. Short spur of middle tibiae less than half the length of the long spur; sides of short spur nearly parallel; tip rounded, produced inwardly. Last segment of abdomen slightly concave.

Female. Spur of anterior tibiae a little shorter than in the male; slightly wider at the base. Short spur of middle tibiae less than half the length of the long spur; acute to the tip. Last segment of abdomen slightly concurve.

Type.—♂; Mount Robson, British Columbia; July 7.

Allotype.—♀; with the same data as the type.

Aphodius mcdonaldi new species

This small species of *Aphodius* was found in deer droppings along with *Aphodius ruricola* Mels. and *manitobensis* Br.

The *ruricola* group of *Aphodius* is a very complicated group and there seems to be several different species lumped under the name *ruricola* in most collections. The new species herein described differs from all other specimens known to this author by the fine punctures on the head, the less convex elytral intervals and the male genitalia which are down curved and broader at the tip than in any specimens of *ruricola* examined by the author.

I take pleasure in naming this species after Norman J. McDonald a well known ornithologist who has accompanied the author on many field trips and was his companion when this species was collected.

Moderately elongate, convex; sides parallel. Reddish-brown, darker on center of head and pronotum; abdomen, tarsi and setae yellowish; shining.

Clypeus broadly, not deeply emarginate; the angle on each side rounded, reflexed; sides nearly straight. Genae well rounded, barely prominent. Frons with three well-defined tubercules placed in a transverse row. Surface of head alutaceous with a few fine punctures scattered over the surface, these punctures are separated from three to four times their diameter. Clypeal carina obsolete.

Pronotum convex; sides feebly arcuate, hind angles well rounded; base slightly sinuate each side of median line; basal marginal line well defined. Punctures of disk intermixed in size, separated from one to three times the diameter of the largest, a narrow median line impunctate.

Elytra nearly parallel, about as wide as the pronotum at the base. Striae finely indicated, crenately punctured. Intervals barely convex with an ill-defined double row of punctures, these punctures about the diameter of the small ones on the pronotum.

Mesosternum not carinate. Metasternum slightly concave, the punctures are a little denser and larger than is usual in this group of *Aphodius;* these punctures laterally bear a yellowish hair. Abdomen punctate, each puncture bearing a yellowish hair. Middle and hind femora sparsely punctate. Anterior tibiae tridentate, denticulate above the third tooth; spur straight, acute. Short spur of middle tibiae two thirds as long as the long spur, acute. Hind tibiae fimbriate with equal spinules; first joint of hind tarsi about equal to the next two joints together.

Length, 3.7 mm.; breadth, 2 mm.

Type.—♂; Pocono Mountains, Pennsylvania; June 4, 1944; (Mark Robinson).

Paratype.—With the same data as the type.

Trox (Omorgus) rubricans new species

This species is allied to *fuliginosus* Rob. but the differently shaped anterior tibiae, coloring of the opaque coating, and the male genitalia will serve to distinguish the two forms.

Oblong; a grayish, opaque, granule-pollinose coating over the entire body except where it has been rubbed off or the low areas of the elytra where it is black and shining. Setae yellowish-brown.

Clypeus triangular; frons with two tubercules side by side, in front of each of which near the clypeal margin is a deep pit. Entire anterior and side margin of head strongly reflexed and fimbriate.

Thoracic tubercules and ridges as usual in this subgenus. Side margins evenly rounded except near the hind angles where they are moderately incised. Laterally the hind margin is indicated by a raised line.

Elytral tubercules moderately high, oval; arranged in four primary rows in addition to the sutural row. Between each of these rows is a vague line of minute tubercules and between the rows of larger and smaller tubercules is a line of coarse punctures. The granule-pollinose areas are sparsely sprinkled with setae the same as the pronotum. Humeral and apical umbone prominent.

Scape of the antennae reddish-black; bristling with rather long ochraceous hairs. Funicle reddish; glabrous. Club yellowish. Apical process of anterior tibiae bifid, side margin of tibiae with a blunt tubercle or denticle. Abdominal plates with a few scattered punctures along their posterior margin.

The male genitalia of the present species are closely allied to the male genitalia of *nodosus* Rob.; in the present species the claspers are constricted in the apical third and the median process is flat and wider than in *nodosus*.

Wing: Length, 18 mm.; breadth, 6 mm.

Length, 14.3 mm.; breadth, 8 mm.

Type.—♂; Venedio, Sinaloa, Mexico; June 16, 1918; (J. A. Kusche). In the collection of the California Academy of Science.

Paratype.—♂; Venedio, Sinaloa, Mexico; June 26, 1918.

Athyreus panamensis new species

This species is allied to *fissicornis* Bates but the strong spine arising in the center of the pronotum of the older species will easily distinguish it. In addition, the median tubercule on the head in *panamensis* is larger and differently shaped.

Black, underparts reddish-yellow, tibiae reddish; hairs luteous.

Head, near the front margin, produced medially upwards into a laterally compressed point. Angles above the antennae produced upwards and outwards into acute points. Angles in front of the eyes are recurved and produced into acute points. Surface of the head covered with granules; each granule bears a hair arising from its posterior side; alutaceous.

Center of the pronotum with an elongated, deeply excavated pit; the center of this depression has a longitudinal, narrow furrow, the surface of which is without granules but is alutaceous. The edge of the larger excavation is margined with a narrow, raised, polished carina on each side. This carina converges inwardly, angulately into a conical point near the middle. There is an oblique, polished, raised line between the above polished edges and the posterior angles of the pronotum. The margin of the pronotum is entire. There is an impression or pit on either side of the pronotum near the side margin. Surface of the pronotum coarsely, closely granulate except the median depression which is sparsely granulate mixed with a few punctures; each granule bears a long hair; alutaceous.

Elytrons, each with a raised, polished, longitudinal line near the suture; humeri polished and a spot near the apex of each elytron also polished; the rest of the surface granulose. Granules transversely elongated on the sides; each granule bears a long, fine hair. Mandibles with a strong notch on the outer edge. Antennae eleven jointed. Anterior tibiae quinquedentate, the sixth tooth obsolete.

Length, 14 mm.; breadth, 7.5 mm.

Type.—♂; Corozal, Canal Zone; June 8, 1937; (R. Bliss).

Diplotaxis fulva new species

This species is probably most closely allied to *arcuata* Fall but can easily be distinguished by its larger size and the shape of the ungual claw of its tarsi.

Oblong-ovate; light brown, underparts lighter in color; moderately shining, pronotum and elytra minutely alutaceous.

Declivity starting at the anterior third of mentum, starting point is accentuated by a raised, fimbriate, curved line. Clypeal margin arcuate, subtruncate at the center; suture well impressed; clypeus densely punctured, punctures are separated by about half their diameter. Punctures on frons confluent medially, sparser posteriorly; size a little larger than those on the clypeus.

Pronotum four-sevenths as long as wide; widest just behind the middle; sides strongly arcuate at the widest part then straight to angles which are not prominent. The punctures are about the size of those on the clypeus but much sparser especially medially.

Elytra a little wider behind. Punctures about the same size as those on the pronotum; separated from two to three times their diameter. The punctures in the three intercostal areas confused. Pygidium sparsely punctured; alutaceous. Body beneath very sparsely punctured, especially medially. Upper tooth of anterior tibiae at the center of tibiae. Ungual tooth obliquely truncate; two-thirds as long as the superior portion of the claw; subapical. Middle and posterior femora with a few setigerous punctures.

Length, 7 mm.; breadth, 3.8 mm.

Type.—sex?; Washington County, Utah.

Paratype.—sex?; with the same data as the type.

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A NEW SPECIES OF ENOCHRUS

(COLEOPTERA: HYDROPHILIDAE)

BY JOHN WAGENER GREEN

Easton, Pennsylvania

(Text-figures)

Among a large number of *Enochrus cinctus* and *consors* collected at light at Atsion, New Jersey, specimens of the same characteristic appearance were found that could not be assigned to either of these species. Partly extruded male genitalia seemed to indicate that three distinct forms were involved, and this was confirmed by subsequent dissections. A few inquiries developed the fact that the third species of this group had also been recognized by other coleopterists. Additional specimens were received from Mr. C. A. Frost and Mr. Hugh B. Leech, to whom the author's sincere thanks are extended. As a new *Enochrus* from the eastern United States is of considerable interest, the following description and comments are presented.

Enochrus consortus new species (Text-figs. 2 and 4.)

Form, size, and punctation as in *cinctus* and *consors*. Color black with the lateral borders of the pronotum pale, as in cinctus; elytra very obscurely paler laterally; head totally black; maxillary palpi with the pseudo-basal segment black in basal two-thirds or more, the two terminal segments sometimes more or less infuscate. Pronotum with a very fine but distinct basal marginal line continuous at each end with the lateral marginal stria, as in *consors*. Claws enlarged basally, the protarsal claws of the male with the basal enlargement acutely angulate anteriorly, as in *consors*. Mesosternal lamina as in *consors*, rather thin, the subcariniform posterior edge descending evenly to the plane of the mesosternum and not or feebly angulate. General structure otherwise exactly as in *cinctus* and *consors*. Aedeagus differing especially from *consors* in the form of the median lobe, which in ventral aspect, is very slender, not increasing in width until near the basal enlargement, and not longitudinally impressed.

Length 6–7.5 mm.

Holotype.—Male; Atsion, N. J., VI–11–45, collected by J. W. Green, located in author's collection.

Allotype.—Female; same data as holotype.

Paratypes.—14 males and 13 females from the following localities:

MASSACHUSETTS: Natick; Framingham; Berlin; Acton; Fall River.
NEW YORK: Fallsburg: Staten Id.; N. Rochelle.
NEW JERSEY: Atsion.
ILLINOIS: Beach.
MICHIGAN: Midland Co.
WISCONSIN: Milwaukee.
MINNESOTA: St. Paul.

Dates of capture range from May 20 to July 9, and on Sept. 22 (Acton).

E. consortus is very close to *E. consors* and would be dismissed as a slight color variation were it not for the constant differences in the male genitalia of the two species. The pale lateral border of the pronotum in *consortus* is usually entire, although sometimes rather obscure posteriorly. Rarely it is limited to a small area curving around the anterior angles of the pronotum. The pale color of the maxillary palpi will always serve to distinguish *consortus* from *consors.* A statement of diagnostic characters for the three species under consideration follows.

1. Pronotum without basal marginal line. Claws similar in the sexes, simply enlarged at base (Fig. 1). Mesosternal lamina rather thick, undercut posteriorly near the base so the posterior edge in profile is strongly angulate..2

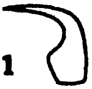
   Pronotum with a very fine but distinct basal marginal line continuous at each end with the lateral marginal stria. Protarsal claws of male with the basal enlargement acutely angulate (Fig. 2). Mesosternal lamina rather thin, its posterior edge descending evenly to the plane of the mesosternum and not, or very feebly, angulate in profile.............3

2. Lateral borders of pronotum, and usually of elytra and head, distinctly pale. Two terminal segments of maxillary palpi pale and more or less infuscate... ..**cinctus** Say

3. Lateral borders of pronotum distinctly pale, at least at the apical angles. Two terminal segments of maxillary palpi pale, occasionally somewhat infuscate. Median lobe of aedeagus slender and parallel-sided, when viewed from below, and not longitudinally impressed (Fig. 4). **consortus** new species

   Upper surface entirely black. Maxillary palpi black, excepting only the extremities of the segments. Median lobe of aedeagus narrowly triangular, when viewed from below, its surface longitudinally impressed or concave (Fig. 5)...................................**consors** Lec.

Cinctus as defined above (Figs. 1 and 3) may prove to be complex, but an examination of male genitalia from color and geographic extremes failed to show any differences not explainable as slight individual variation. Apparently there are no secondary sexual modifications other than that shown in the male protarsal claws of *consors* and *consortus.* In all three species there is in both sexes at the apex of the last abdominal sternite a minute arcuate notch bearing a comb-like fringe of stiff fulvous hairs. This structure occurs in other Hydrophilids and in many of the species of *Enochrus,* but has been observed to be entirely absent in *E. perplexus, reflexipennis, hamiltoni, diffusus,* and *conjunctus.*

1


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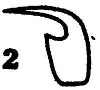

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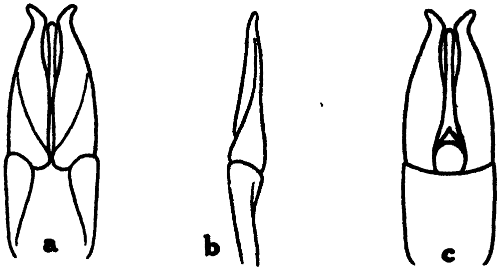

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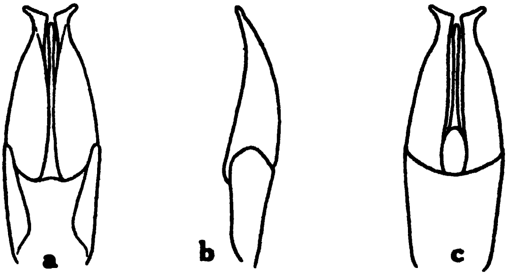

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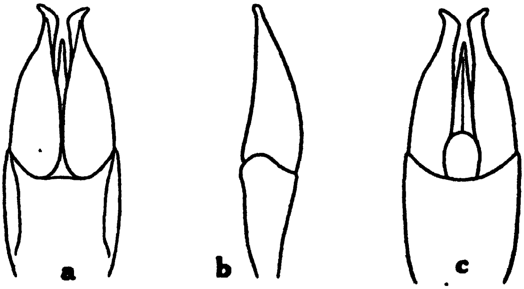

Fig. 1.—*Enochrus cinctus* Say. Male protarsal claw. Fig. 2.—*Enochrus consortus* new species and *consors* Lec. Male protarsal claw. Fig. 3.—*Enochrus cinctus* Say. Male genitalia, (a) dorsal, (b) lateral, and (c) ventral aspects. Fig. 4.—*Enochrus consortus* new species. Same details as Fig. 3. Fig. 5.—*Enochrus consors* Lec. Same details as Fig. 3.

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THE GENERIC NAMES OF THE SPIDER WASPS (PSAMMOCHARIDAE *olim* POMPILIDAE) AND THEIR TYPE SPECIES

(HYMENOPTERA: ACULEATA)

BY V. S. L. PATE

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Correct generic nomenclature is one of the most serious and difficult problems confronting the taxonomic entomologist today. Often this is due in large measure to the uncertainty and conflicting opinion as to what is the correct type species of a generic name. For a failure to recognize generic types has led to confusion in the taxonomy of many groups. This is particularly true now in the spider wasps of the family Psammocharidae. Relatively little attention was paid to these wasps prior to 1900, but since that time, and particularly in the past quarter of a century, they have been studied more and more intensively by various investigators, notably Banks, Arnold, and Haupt. Before 1900 only about sixty-five generic or subgeneric names had been proposed within this group, but since then this number has been quintupled until now almost three hundred fifty are known. Indeed, in the past two decades alone over one hundred seventy-five generic and subgeneric names have been introduced by Banks, Arnold, Haupt, and others. And the end is not yet in sight. But the time has obviously come to take inventory of this stock of names.

The classification of the Psammocharidae has unfortunately not kept pace with this ever increasing number of genera and subgenera. Haupt, Arnold, Banks, and others have from time to time presented whole or partial classifications, but although each of these taxonomies has obvious merit in some one or several particulars, each is patently often at variance with the others. The reason for this is easily understandable: nearly every system proposed to date is based largely on the forms of some particular region. Of course in time these differences of opinion will be resolved, and eventually a system embodying the best features of all the variant classifications will, it is sincerely hoped, be the result. As a first step toward this desirable goal, I offer here to my fellow workers a list of the generic names proposed for wasps of the family Psammocharidae, together with the correct type species of each name, insofar as I have been able to determine it.

Many variations in the orthography of the names have been found. Generally, however, these are misspellings which ordinarily do not invalidate the originals but merely encumber the literature, and are moreover as frequently the errors of printers as of authors. Nevertheless there are some *lapsus calamorum* like *Batazonus* for *Batozonus*, *Cryptochilus* for *Cryptocheilus*, *Pompiloides* for *Pompilioides* and the like, which have reached the stage where they may be considered mumpsimi, and every mumpsimus of this sort which I have been able to trace has been incorporated in its proper place in the following list.

Another common error of most authors is the failure to recognize the correct gender of many generic names. Thus *Cryptocheilus* and the various names compounded with and terminating in *-chilus* are neuter not masculine, and this is likewise true of *Aulocostethus*, *Telostegus*, and similar compounds. Similarly *Pedinaspis*, *Priocnemis*, *Malloscelis*, *Leptodialepis* and names compounded with *-aspis*, *-cnemis*, *-scelis*, and *-lepis* respectively must be considered feminine. In the last combination in square brackets under each name in the following list, I have indicated the correct gender of all names by the proper suffix of the specific name when this is an adjective in the nominative case.

The form employed in the following catalogue is essentially the same as that introduced in my list of the generic names of the Sphecoid wasps and their type species.[1] Given in order are *first:* the generic name; *second:* the author and year in which it was proposed; *third:* the reference to the original description, supplemented in those few cases where no species were originally included by an indication of the first reference in which species were cited, and nearly every bibliographic citation followed by the exact date of publication insofar as I have been able to determine it; *fourth:* the number of species originally included in the genus or subgenus, unless it was monobasic; *fifth:* the type species, followed by any pertinent synonymy in square brackets; *sixth:* a statement of the method whereby the type was fixed; and *finally*, an indication of any isogenotypic synonymy.

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[1] Mem. Amer. Ent. Soc., no. 9 (1937).

In order to conserve space, I have given as a rule only the designation which I consider to be the earliest valid type fixation, although in a few cases where the designation may be construed as doubtful, I have added, sometimes in a footnote, the next valid designation or a discussion of the case in the appendix. As in my paper on the Sphecoid wasps, I have ventured to add in square brackets following the citation of the genotypic species certain data of a subjective nature as to what I consider to be pertinent synonymy. Unless it is obvious from the manner in which the genotypic species is cited, the first combination in brackets usually represents the form employed and the rank (*i.e.* generic or subgeneric) accorded the name by the author who proposed the genus or subgenus (unless this combination is preceded by the abbreviation *i.e.*); whereas the final form represents in every case, unless otherwise indicated, what I believe may be the correct generic or subgeneric position of the name. Whereever possible I have arrived at this decision through a study of specimens available to me, either here or in various collections I have been privileged to examine. But in many cases I have had to rely heavily on the published statements of Arnold, Banks, and Haupt. I do not expect that everyone will always agree with these allocations, but the solution to that is obvious: let him perfect a classification which will permit the proper taxonomic location of all these species. I have done what I could with the material and facilities at hand. Moreover I still have the temerity to believe that, despite occasional errors, such subjective data are informative and may be of considerable value to those, who like myself, are not as proficient in the classificatory intricacies of the Psammocharidae as are those experienced specialists in this group, Mr. Nathan Banks and Dr. George Arnold.

Many persons have aided me during the erratic course of this study, and to all of them I express here my gratitude and thankful appreciation. To the following gentlemen special thanks are due. Mr. Nathan Banks, Emeritus Professor and Curator of Insects at the Museum of Comparative Zoölogy, Harvard College, has helped on various occasions by expressing valued opinions on certain genera; Dr. George Arnold, Director of the National Museum of Southern Rhodesia, kindly sent me a fully annotated copy of his masterly monograph on the Ethiopian Psammocharidae, and furthermore has kept me promptly supplied with additional products of his facile pen; Mr C. F. W. Muesebeck, in charge of the Division of Insect Identification of the Bureau of Entomology and Plant Quarantine, kindly permitted me access to the comprehensive card catalogue to genera and species in the United States National Museum, and has been of aid in various other ways; and finally, Mr. James A. G. Rehn, Curator of Insects at the Academy of Natural Sciences of Philadelphia, has generously given me the benefit of his long experience in the broad field of zoological nomenclature as well as helping me at various occasions on bibliographical problems. I assume sole responsibility, however, for any opinions expressed or statements made in the following pages.

In the ensuing catalogue, the following new names are proposed:

Arachnodaicter new name for *Arachnophila* Ashmead, 1902 not of Salvadori, 1874.
Arnoldatus new genus for *Apteropompilus* Arnold, 1932 not of Brauns, 1889.
Asthenoctenidia new name for *Asthenoctenus* Arnold, 1937 not of Simon, 1897.
Caliadurgus new name for *Calicurgus* Lepeletier, 1845 not of Brullé, 1833.
Gilbertellana new name for *Gilbertella* Turner, 1917 not of Waite, 1902.
Java new name for *Dichelonyx* Haupt, 1928, not of Harris, 1826.
Marimba new genus for *Cryptosalsus* Arnold, 1932 not of Turner, 1917.
Quiris new name for *Odontoderes* Haupt, 1929 not of Schoenherr, 1823.
Tea new subgenus for *Paraferreola* Auctt. not of Sustera, 1913.
Zarachnophroctonus new name for *Arachnophroctonus* Ashmead, 1902 not of Howard, 1901. (See Appendix II.)

LIST OF GENERIC AND SUBGENERIC NAMES[2]

Actenopoda Ashmead, 1902.[3] Canad. Entom., XXXIV, p. 88, (April 5, 1902).
TYPE: *Actenopoda Rileyi* Ashmead, 1902 [= *Planiceps niger* Cresson, 1867 = *Actenopoda* (*Actenopoda*) *nigra* (Cresson)]. (Original designation.)

Adipogon Banks, 1944. Bull. Mus. Comp. Zoöl., Harvard Coll., XCIV, p. 181, (June, 1944). [Two species.]
TYPE: *Pompilus* (*Agenia*) *pulchripennis* Cresson, 1867 [= *Dipogon* (*Adipogon*) *pulchripennis* (Cresson)]. (Original designation.)

Adonta Billberg, 1820. Enumeratio Insectorum . . ., p. 101.
Proposed as a new name for, and isogenotypic with, *Salius* Fabricius, 1805 not of Schrank, 1798, *q.v.*

Aeluropetrus Arnold, 1936. Ann. Transvaal Mus., XVIII, p. 120, (Feb. 7, 1936). [Two species.]
TYPE: *Aeluropetrus lugubris* Arnold, 1936. (Original designation.)

Aetheopompilus Arnold, 1934. Occ. Pap. Rhodesian Mus., no. 3, p. 5, (May 31, 1934).
TYPE: *Aetheopompilus obliquetruncatus* Arnold, 1934. (Original designation and monobasic.)

Afropompilus Arnold, 1936.[4] Ann. Transvaal Mus., XVIII, p. 107, (Feb. 7, 1936).
TYPE: *Pompilus ignitus* Smith, 1855 [= *Tachypompilus* (*Afropompilus*) *ignitus* (Smith) = *Afropompilus ignitus* (Smith)]. (Original designation and monobasic.)

Agenia Schiødte, 1837[5] not of Descourtilz, 1825. Krøyer's Naturhistorisk Tidsskrift (Kjøbenhavn), I, p. 321. [Two species.]
TYPE: *Sphex variegata* Linnaeus, 1758 [= *Agenia variegata* (L.) = *Dipogon* (*Dipogon*) *variegatus* (L.)]. (By designation of Westwood, Jan. 1840, Introd. Mod. Class. Insect., II, Gen. Synop., p. 82.)
Isogenotypic with *Deuteragenia* Sustera, 1913, *Pogonius* Dahlbom, 1845 not of Leach, 1815 and *Anoplius* Lepeletier, 1845 not of Dufour, 1834. *V. et.*: *Dipogon* Fox, 1897.

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[2] This list is believed to be complete up to the end of December, 1943, but it also contains a number of other names published prior to January 1, 1946.

[3] *Cf.* discussion of *Actenopoda* in appendix. V. et.: *Neoplaniceps* Bradley, *Notoplaniceps* Bradley, and *Plectraporus* Bradley.

[4] Proposed originally as a subgenus of *Tachypompilus*, Arnold raised *Afropompilus* to full generic rank in 1937 (Ann. Transvaal Mus., XIX, p. 71).

[5] *Cf.* discussion of *Dipogon* Fox in appendix.

Ageniella Banks, 1912.[6] Journ. New York Ent. Soc., XIX, p. 222, (Feb. 1912). [Seventeen species.]

TYPE: *Pompilus* (*Agenia*) *acceptus* Cresson, 1867 [= *Ageniella accepta* (Cresson)]. (Original designation.)

Agenioideus Ashmead, 1902.[7] Canad. Entom., XXXIV, p. 85, (April 5, 1902).

TYPE: *Pompilus humilis* Cresson, 1867 [= *Agenioideus humilis* (Cresson)]. (Original designation.)

Ageniοxenus Ashmead, 1902. Canad. Entom., XXXIV, p. 137, (June 9, 1902).

TYPE: *Ceropales rufiventris* Walsh, 1869 [= *Ceropales Robinsonii* Cresson, 1867 [8]]. (Original designation.)

Agenoideus Banks, 1917. Bull. Mus. Comp. Zoöl., Harvard Coll., LXI, p 107.

Lapsus calami for, and isogenotypic with, *Agenioideus* Ashmead, 1902, *q.v.*

Aglochares Banks, 1941. Occ. Pap. Bernice P. Bishop Mus. (Honolulu), XVI, no. 10, pp. 242, 245, (Sept. 2, 1941).

TYPE: *Aglochares vachali* Banks, 1941. (Original designation and monobasic.)

Agriogenia Banks, 1919. Canad. Entom., LI, p. 83, (April 28, 1919).

TYPE: *Pompilus* (*Agenia*) *brevis* Cresson, 1867 [= *Agriogenia brevis* (Cresson) = *Dipogon* (*Dipogon*) *brevis* (Cresson) [9]]. (Original designation and monobasic.)

Alasagenia Banks, 1944. Zoologica (New York), XXIX, p. 106, (Nov. 22, 1944). [Several species.]

TYPE: *Alasagenia erichsoni* Banks, 1944. (Original designation.)

Algoa Brues, 1910 [10] not of Castelnau, 1861. Journ. New York Ent. Soc., XVIII, p. 18 (April, 1910).

TYPE: *Algoa heterodoxa* Brues, 1910 [= *Algoella heterodoxa* (Brues)]. (Original designation and monobasic.)

Isogenotypic with *Algoella* Kieffer, 1914, *q.v.*

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[6] *Cf.* remarks under *Irenangelus* Schulz, 1906.

[7] *Cf.* *Chalcochares* Banks and *Gymnochares* Banks.

[8] Viereck (1902, Ent. News, XIII, p. 275) states ". . . *Ceropales Robinsoni* Cress. = *C. rufiventris* Walsh, the cubitus in the hind wings originates *behind* the transverse median nervure and not *before* as in Mr. Ashmead's table; in other words the type of *Agenioxenus* Ashm., is congeneric with the type of *Ceropales* Latr. (*Ceropales maculatus* Latr.), consequently *Agenioxenus* must be placed as synonymous with *Ceropales* Latr." But Banks (1912, Journ. New York Ent. Soc., XIX, p. 220) remarks that ". . . Mr. Rohwer informs me that Ashmead's type of *Agenioxenus* is merely a specimen of *P*[*ompilus*] *interrupta* [Say = *Batozonus interruptus* (Say)]." In either case, *Agenioxenus* Ashmead falls as a synonym. *V. et.*: Ashmead, 1902, Ent. News, XIII, p. 318.

[9] *Teste* Banks, 1944, Bull. Mus. Comp. Zoöl., XCIV, p. 181.

Algoella Kieffer, 1914.[10] Das Tierreich, Lf. 41, pp. 232, 273, (Aug. 1914).
TYPE: *Algoa heterodoxa* Brues, 1910 [= *Algoella heterodoxa* (Brues)].
Proposed as a new name for, and isogenotypic with, *Algoa* Brues, 1910 not of Castelnau, 1861. *V. et.* *Psyllosphex* Arnold, 1935.

Allaporus Banks, 1933. Psyche, XL, p. 2, (July 11, 1933). [Two species.]
TYPE: *Planiceps pulchella* Banks, 1910 [= *Aporus rufiventris* Cresson, 1872 [11] = *Allaporus rufiventris* (Cresson)]. (Original designation.)

Allochares Banks, 1917. Bull. Mus. Comp. Zoöl., Harvard Coll., LXI, p. 98, (May, 1917).
TYPE: *Allochares bruesi* Banks, 1917 [= *Pompilus* (*Agenia*) *azureus* Cresson, 1867 [12] = *Allochares azureus* (Cresson)]. (Original designation and monobasic.)

Allocyphonyx Ashmead, 1902. Canad. Entom., XXXIV, p. 136, (June 9, 1902).
TYPE: *Pompilus maurus* Cresson, 1867 [= *Allocyphonyx maurus* (Cresson)]. (Original designation.)

Alococurgus Haupt, 1937. Zeitschr. f. Naturwissensch. (Halle), XCI, pp. 126, 130.
TYPE: *Alococurgus goerlingi* Haupt, 1937. (Original designation and monobasic.)

Ameragenia Banks, 1945. Bol. Entom. Venezol. (Caracas), IV, p. 125, (June 30, 1945).
TYPE: *Ameragenia irene* Banks, 1945. (Monobasic.)

Amerocnemis Banks, 1945. Bol. Entom. Venezol. (Caracas), IV, p. 93, (June 30, 1945). [Four species.]
TYPE: *Amerocnemis bequaerti* Banks, 1945. (Original designation.)

Anaferreola Haupt, 1935. Ark. Zool. (Stockholm), XXVII A, N:o 10, pp. 2, 19, (Feb. 4, 1935).

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[10] Brues originally placed *Algoa* in the Bethylidae but Reid (1939, Proc. R. Ent. Soc. London, (B), VIII, pp. 95–102) has shown that it is a Psammocharid near *Psyllosphex* Arnold. Brues (1943, Ann. Ent. Soc. Amer., XXXVI, p. 311) remarks ". . . I strongly suspect that the wasp described by Cameron [in 1904] as *Apteropompilus dentatus* from Cape Colony is *Algoella heterodoxa* Brues. Cameron's description . . . agrees with *A. heterodoxa*, even to the color of the species in question. If they are identical, Cameron's species name has priority. . . . [Reid] believes that *Algoella* is very close to *Phyllosphex* [sic! i.e. *Psyllosphex*] (*Apteropompilus*) *dentatus* Cameron, a conclusion that I can heartily support . . ." Arnold (April 9, 1935, Ann. Transvaal Mus., XV, pp. 479–483) includes *Apteropompilus dentatus* Cameron, 1904 in his new genus *Psyllosphex*, which may thus prove to be a synonym of *Algoella* Kieffer, 1914.

[11] *Teste* Bradley, 1944, Trans. Amer. Ent. Soc., LXX, p. 120.

[12] *Teste* Bradley, 1944, Trans. Amer. Ent. Soc., LXX, p. 149.

TYPE: *Anaferreola söderbomi* Haupt, 1935. (Original designation and monobasic.)

Anopliella Banks, 1939. Canad. Entom., LXXI, pp. 225, 227, (Nov. 30, 1939). [Two species.]

TYPE: *Pompilus tenebrosus* Cresson, 1865 [= *Anopliella tenebrosa* (Cresson)]. (Original designation.)

Anoplinellus Banks, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, pp. 84, 95, (Jan. 1934).

TYPE: *Pompilus clotho* Smith, 1879 [= *Anoplinellus clotho* (Smith)]. (By original inference and also by designation of Haupt, 1935, Rev. Suisse Zool., XLII, p. 318.)

Anopliodes Banks, 1939. Canad. Entom., LXXI, pp. 225, 226, (Nov. 30, 1939).

TYPE: *Anopliodes modestus* Banks, 1939. (Monobasic.)

Anoplius Dufour, 1834.[13] Ann. Soc. Ent. France, II, p. 483, (March, 1834). [Two species.]

TYPE: *Pompilus niger* Fabricius [i.e. *Sphex nigra* Fabricius, 1775 = *Sphex nigerrima* Scopoli, 1763 = *Anoplius nigerrimus* (Scopoli) = *Psammochares nigerrimus* (Scopoli)]. (By designation of Fox, Nov. 1901, Ent. News, XIII, p. 268.)

Anoplius Lepeletier, 1845 not of Dufour, 1834.[14] [Roret's Suite á Buffon], Hist. Nat. Insect., Hymén., III, p. 440. [Thirty-five species.]

TYPE: *Anoplius variegatus* v. d. Lind. [i.e. *Sphex variegata* Linnaeus, 1758 = *Anoplius variegatus* (L.) = *Dipogon* (*Dipogon*) *variegatus* (L.)]. (By designation of Blanchard, *in* Cuvier, 1849, Régne Animal, (3rd Ed.), pl. 120, fig. 7.)

Isogenotypic with *Agenia* Schiødte not of Descourtilz, 1825 and *Deuteragenia* Sustera, 1913, q.v. V. et.: *Dipogon* Fox, 1897.

Anoplochares Banks, 1939. Canad. Entom., LXXI, pp. 225, 229, (Nov. 30, 1939). [Two species.]

TYPE: *Pompiloïdes rectus* Banks, 1914 [= *Anoplochares rectus* (Banks)]. (Original designation.)

Anospilus Haupt, 1929. Mitt. Zool. Mus. Berlin, XV, Heft 1, pp. 122, 176, (April, 1929). [Four species.]

TYPE: *Pompilus orbitalis* A. Costa, 1863 [= *Anospilus orbitalis* (A. Costa)]. (Original designation.)

Anotochares Banks, 1939. Canad. Entom., LXXI, pp. 225, 228, (Nov. 30, 1939).

TYPE: *Anotochares engleharti* Banks, 1939. (Monobasic.)

Aoplopus Agassiz, 1846. Nomen. Zool. Index Univ., pp. 27, 41.

Emendation for, and isogenotypic with, *Auplopus* Spinola, 1841, *q.v.*

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[13] *Cf.* *Aphilocterus* Ashmead, 1902, and discussion of *Psammochares* in appendix.

[14] *Cf.* discussion of *Dipogon* Fox in appendix.

Apareia Haupt, 1929. Mitt. Zool. Mus. Berlin, xv, Heft 1, pp. 122, 174, (April, 1929).
TYPE: *Pompilus oedipus* Kohl, 1886 [= *Apareia oedipus* (Kohl)]. (Original designation and monobasic.)

Aphanilopterus Meunier, 1888. Naturalista Siciliano, VII, p. 301.
TYPE: *Aphanilopterus vagabundus* Meunier, 1888. (Monobasic.)

Aphilocteuus Ashmead, 1902. Canad. Entom., XXXIV, p. 87, (April 5, 1902).
TYPE: *Pompilus virginiensis* Cresson, 1867 [= *Aphiloctenus virginiensis* (Cresson) = *Anoplius virginiensis* (Cresson) = *Psammochares virginiensis* (Cresson)]. (Original designation.)

Apinaspis Banks, 1938. Proc. Ent. Soc. Washington, XL, p. 247, (Nov. 30, 1938).
TYPE: *Pompilus myrmecoides* Bingham, 1897 [= *Apinaspis myrmecoides* (Bingham)]. (Original designation and monobasic.)

Aplochares Banks, 1944. Zoologica (New York), XXIX, pp. 110, 111, (Nov. 22, 1944).
TYPE: *Pompilus imitator* Smith, 1864 [= *Aplochares imitator* (Smith)]. (Original designation and monobasic.)

Aploneura Ruiz, 1933. Rev. Chileña Hist. Nat., XXXVII, p. 217.
Lapsus calami for *Haploneura* Kohl, 1884, *q.v.*

Aploneurion Ruiz, 1933. Rev. Chileña Hist. Nat., XXXVII, p. 217.
Lapsus calami for *Haploneurion* Kohl, 1885, *q.v.*

Aploneuta Ruiz, 1933. Rev. Chileña Hist. Nat. XXXVII, p. 217.
Lapsus calami for *Haploneura* Kohl, 1884, *q.v.*

Aporinellus Banks, 1911.[15] Proc. Ent. Soc. Washington, XIII, p. 238, (Dec. 29, 1911); [two species].—Journ. New York Ent. Soc., XIX, p. 223, (Feb. 1912); [five species].
TYPE: *Aporus fasciatus* Smith, 1855 [= *Aporinellus fasciatus* (Smith)]. (By designation of Banks, Feb. 1912, Journ. New York Ent. Soc., XIX, p. 223.)

Aporinus Ashmead, 1902.[16] Canad. Entom., XXXIV, p. 88, (April 5, 1902). [No species.]
TYPE: *Sphex dimidiata* Fabricius, 1793 [= *Aporinus dimidiatus* (F.) = *Ferreola dimidiata* (F.)] (By present designation.)

Aporoideus Ashmead, 1902. Canad. Entom., XXXIV, p. 86, (April 5, 1902).
TYPE: *Pompilus sericeus* Van der Linden, 1827 [= *Aporoideus sericeus* (Van der Linden)[17]]. (Original designation.)

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[15] *Cf.* Banks (1934, Proc. Amer. Acad. Arts & Sci., LXIX, p. 107) and Bradley (1944, Eos, XX, pp. 93–95) for a discussion of *Aporinellus.*

[16] *Cf.* discussion of *Aporinus* Ashmead in appendix.

[17] *Teste* Banks, 1941, Proc. Acad. Nat. Sci. Philadelphia, XCII, p. 353. *V. et.* discussion of *Psammochares* Latreille in appendix.

Aporus Spinola, 1808.[18] Insect. Ligur., II, (ii), p. 5. [Two species.]
TYPE: *Aporus bicolor* Spinola, 1808. (By designation of Latreille, 1810, Considérations générales . . . des Insectes, Tabl. Gén., p. 437.)

Apteropompiloides Arnold, 1932. Ann. Transvaal Mus., XV, pp. 44, 108, (Oct. 1, 1932).
TYPE: *Apteropompilus Tosquineti* Brauns, 1899 [= *Apteropompiloïdes Tosquineti* (Brauns) = *Apteropompilus tosquineti* Brauns]. (Original designation and monobasic.)
Isogenotypic with *Apteropompilus* Brauns, 1899, *q.v.* *V. et.* *Arnoldatus* new name.

Apteropompilus Brauns, 1899. Ann. k. k. Naturhist. Hofmus. Wien, XIII (4), p. 383, ([1898] 1899). [Two species.]
TYPE: *Apteropompilus Tosquineti* Brauns, 1899. (By designation of Ashmead, 1902, Canad. Entom., XXXIV, p. 133.)
Isogenotypic with *Apteropompiloides* Arnold, 1932, *q.v.*

Arachnodalcter new name for *Arachnophila* Ashmead, 1902 not of Salvadori, 1874 [19] not of Haeckel, 1887.[20]
TYPE: *Pompilus divisus* Cresson, 1867 [= *Arachnodaïcter divisus* (Cresson)].
Isogenotypic with *Arachnophila* Ashmead, 1902, not of Salvadori, 1874 not of Haeckel, 1887, *q.v.*

Arachnophila [21] Ashmead, 1902 not of Salvadori, 1874 not of Haeckel, 1887. Canad. Entom., XXXIV, p. 86, (April 5, 1902).
TYPE: *Pompilus divisus* Cresson, 1867 [= *Arachnophila divisa* (Cresson) = *Arachnodaicter divisus* (Cresson)]. (Original designation.)
Isogenotypic with *Arachnodaïcter* new name, *q.v.* *V. et.*: *Arochnophila*, Ashmead, 1902 and *Arachnospila* Kincaid, 1900.

Arachnophroctonus Ashmead, 1902. Canad. Entom., XXXIV, p. 83, (April 5, 1902).
TYPE: *Pompilus ferrugineus* Say [i.e. *Ceropales ferruginea* Say, 1824 = *Arachnophroctonus ferrugineus* (Say)]. (Original designation.)

Arachnospila Kincaid, 1900.[22] Proc. Washington Acad. Sci., II, p. 509, (Dec. 20, 1900).
TYPE: *Arachnospila septentrionalis* Kincaid, 1900. (Monobasic.)

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[18] Cf. *Tachyagetes* Haupt, 1930, and discussion of both names in appendix under *Aporus* Spinola, 1808.

[19] Salvadori, 1874, Ann. Mus. Civ. Stor. Nat. Genova, V, p. 172.

[20] Haeckel, 1887, Rep. Voy. Challenger, Zool., XVIII, fasc. 1, no. 40, p. 266.

[21] This name appears spelled as both *Arochnophila* and *Arachnophila* on p. 86 (Canad. Entom., XXXIV), but in the Errata on p. 339 is the notation: "Page 86, line 10, for Arochnophila read Arachnophila." Ashmead and later authors have generally interpreted the spelling of *Arochnophila* as merely a typographical error for *Arachnophila.*

[22] Ashmead (1902, Proc. Washington Acad. Sci., IV, p. 134) states that

Arachnotheutes Haupt, 1927. Deutsch. Ent. Zeitschr., 1927, Beiheft, pp. 262, 282, (Oct. 1, 1927).

TYPE: *Pompilus rufithorax* A. Costa, 1887 [= *Arachnotheutes rufithorax* (Costa)]. (Original designation and monobasic.)

Argyroclitus Arnold, 1937. Ann. Transvaal Mus., XIX, p. 26, (Nov. 8, 1937). [Six species.]

TYPE: *Argyroclitus fasciatipennis* Arnold, 1937 [= *Pompilus erythrostomus* Cameron,.1910[23] = *Argyroclitus erythrostomus* (Cameron)]. (Original designation.)

Argyrogenia Bradley, 1944.[24] Notulae Naturae, Acad. Nat. Sci. Philadelphia, no. 145, p. 6, (Oct. 18, 1944).

TYPE: *Pompilus* (*Pompilus*) *gloriosus* Cresson, 1869 [= [*Argyrogenia*] *gloriosus* (Cresson) = *Priochilus gloriosum* (Cresson)]. (Monobasic.)

Arnoldatus new genus for *Apteropompilus* sensu Arnold,[25] 1932 not of Brauns, 1899.

TYPE: *Apteropompilus Saussurei* Brauns, 1899 [= *Arnoldatus saussurei* (Brauns)].

Arochnophila Ashmead, 1902.

See *Arachnophila* Ashmead, 1902 and *Arachnodaicter* new name.

Arpactomorpha Arnold, 1934. Ann. Transvaal Mus., XV, pp. 290, 364, (Aug. 1, 1934).

TYPE: *Arpactomorpha pulchella* Arnold, 1934. (Original designation and monobasic.)

Aspidaporus Bradley, 1944. Trans. Amer. Ent. Soc., LXX, p. 122, (July 31, 1944). [Two species.]

TYPE: ? *Planiceps jugosus* Fox, 1897 [= *Aspidaporus jugosus* (Fox)]. (Original designation.)

Arachnospila Kincaid, 1900 is merely a typographical error for *Arachnophila* Ashmead, 1902. But although there may be some basis for this contention, nevertheless it seems best to regard *Arachnospila* as a separate and valid name inasmuch as *Arachnospila septentrionalis* Kincaid, 1900 and *Pompilus divisus* Cresson (the type of *Arachnophila* Ashmead, 1902) are not congeneric. The exact taxonomic position of *A. septentrionalis* is still somewhat uncertain, but specimens before me, determined as such, are congeneric with the *Pycnopompilus* section of *Psammochares*, and I believe therefore that *Pycnopompilus* Ashmead, 1902 should be recorded as a synonym of *Arachnospila* Kincaid, 1900.

[23] *Teste* Arnold, 1939, Occ. Pap. Nat. Mus. South. Rhodesia, no. 8, p. 56.

[24] Bradley included *Argyrogenia* in a discussion of *Priochilus* Banks (published in March, 1944), with only one species associated with the name, *Pompilus gloriosus* Cresson, 1869, which thus becomes the type of *Argyrogenia* by monotypy.

[25] Arnold: 1932, Ann. Transvaal Mus., XV, p. 106.

Asthenoctenidia new name for *Asthenoctenus* Arnold, 1937 not of Simon, 1897.[26]

TYPE: *Anoplius argenteo-decoratus* Cameron, 1904 [= *Dicyrtomellus* (*Asthenoctenidia*) *argenteo-decoratus* (Cameron)].

Isogenotypic with *Asthenoctenus* Arnold, 1937 not of Simon, 1897, *q.v.*

Asthenoctenus Arnold, 1937 not of Simon, 1897.[26] Ann. Transvaal Mus., XIX, pp. 15, 21, (Nov. 8, 1937).

TYPE: *Anoplius argenteo-decoratus* Cameron, 1904 [= *Dicyrtomellus* (*Asthenoctenus*) *argenteo-decoratus* (Cameron) = *Dicyrtomellus* (*Asthenoctenidia*) *argenteo-decoratus* (Cameron)]. (Original designation and monobasic.)

Isogenotypic with *Asthenoctenidia* new name, *q.v.*

Ateloclavelia Arnold, 1932. Ann. Transvaal Mus., XV, pp. 44, 106, 116, (Oct. 1, 1932). [Two species.]

TYPE: *Ateloclavelia angustipennis* Arnold, 1932. (Original designation.)

Atelostegus Haupt, 1929. Mitt. Zool. Mus. Berlin, XV, Heft 1, pp. 123, 183, (April, 1929).

TYPE: *Pompilus* (*Evagetes*) *thrinax* Kohl, 1909 [= *Atelostegus thrinax* (Kohl)]. (Original designation and monobasic.)

Atopopompilus Arnold, 1937. Ann. Transvaal Mus., XIX, p. 22, (Nov. 8, 1937). [Two species.]

TYPE: *Pompilus venans* Kohl, 1894 [= *Atopopompilus venans* (Kohl)]. (Original designation.)

Aulocostethus Ashmead, 1902.[27] Canad. Entom., XXXIV, p. 133, (June 9, 1902).

TYPE: *Aulocostethus bifasciatus* Ashmead, 1902 [= *Aulocostethus bifasciatum* Ashmead]. (Original designation.)

Auplopus Spinola, 1841.[28] Ann. Soc. Ent. France, X, p. 108.

TYPE: *Pompilus femoratus* Fabricius, 1805, var. ♀ [= *Auplopus femoratus* (F.) var.]. (Monobasic.)

Isogenotypic with *Aoplopus* Agassiz, 1846, *q.v.*

Austrosalius Turner, 1917. Proc. Ent. Soc. London, 1917, p. 75, (Nov. 24, 1917). [Two species.]

TYPE: *Ferreolomorpha artemis* Turner, 1910 [= *Austrosalius artemis* (Turner)]. (Original designation.)

Baguenaia Giner Marí, 1942. Eos, Rev. Españ. Ent., XVIII, pp. 71, 82, (April 10, 1942).

TYPE: *Baguenaia inesperata* Giner Marí, 1942. (Original designation and monobasic.)

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[26] Simon: 1897, Hist. Araign. (ed. 2), II, fasc. 1, p. 113.

[27] *Cf.* Bradley, 1944, Trans. Amer. Ent. Soc., LXX, p. 140.

[28] *Cf.* discussion of this name in appendix. V. et.:*Pilpomus* Costa and *Pseudagenia* Kohl, *Stenagenia* Saussure, and *Schizagenia* Cameron.

Balanoderes Haupt, 1929. Mitt. Zool. Mus. Berlin, XV, Heft 1, pp. 119, 155, (April, 1929). [Four species.]

TYPE: *Sphex analis* Fabricius, 1781 [29] [= *Balanoderes analis* (F.) = *Tachypompilus analis* (F.) [30]]. (By designation of Haupt, Nov. 1929, Mitt. Zool. Mus. Berlin, p. 606.)

Balboa Banks, 1925 [31] not of Distant, 1893 not of Hebard, 1927. Bull. Mus. Comp. Zoöl., Harvard Coll., LXVII, p. 336, (Nov. 1925).

TYPE: *Priocnemis barbouri* Banks, 1925 [= *Balboa barbouri* (Banks) = *Balboana barbouri* (Banks)]. (Monobasic.)

Balboana Banks, 1944.[32] Zoologica (New York), XXIX, pp. 102, 103–104, (Nov. 22, 1944). [Two species.]

TYPE: *Pompilus auripennis* Fabricius, 1805 [= *Balboana auripennis* (F.)]. (Present designation.)

Bambesa Arnold, 1936. Ann. Transvaal Mus., XVIII, p. 421, (May 25, 1936).

TYPE: *Bambesa grisea* Arnold, 1936. (Original designation and monobasic.)

Batozonellus Arnold, 1937.[33] Ann. Transvaal Mus., XIX, p. 1, (Nov. 8, 1937). [Eleven species.]

TYPE: *Pompilus fuliginosus* Klug, 1834 [= *Batozonellus fuliginosus* (Klug)]. (Original designation.)

Batazonus Banks, 1912. Journ. New York Ent. Soc., XIX, pp. 221, 224, (Feb. 1912).

Lapsus calami for, and isogenotypic with, *Batozonus* Ashmead, 1902, *q.v.*

Batozonus Ashmead, 1902.[34] Canad. Entom., XXXIV, p. 81, (April 5, 1902).

TYPE: *Pompilus algidus* Smith, 1855 [= *Batozonus algidus* (Smith)]. (Original designation.)

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[29] Haupt in the key to genera (Mitt. Zool. Mus. Berlin, XV, p. 119) cites as type of *Balanoderes* a "*B. apicalis* F.," but he gives no such species under his treatment of the genus (*op. cit.*, p. 155 *et seq.*). I believe "*B. apicalis* F." must be considered a *lapsus calami* for *Sphex analis* Fabricius, 1781, which Haupt designates type of *Balanoderes* in November, 1929.

[30] *Teste* Haupt (1930, Mitt. Zool. Mus. Berlin, XV, p. 606) who states: "1. *Balanoderes* Hpt. (Mitt. Zool. Mus., Bd. 15, 1929 pp. 119, 155) mit *B. analis* F. als Typus muss ersetzt werden durch *Tachypompilus* Ashm. . . . Als Typus gibt Ashmead an *T. abbotti* Ashm., der aber mit *P. analis* F. synonym ist; er hat niemals eine Beschreibung der Art geliefert. Da aber seine neue Gattung monotypisch ist und in der Gattungsdiagnose die Beschreibung der Art mit enthalten ist, so hat *Tachypompilus* Ashm. die Priorität.

[31] Cf. *Balboana* Banks, 1944.

[32] Evidently intended as a new name for *Balboa* Banks, 1925 not of Distant, 1892 not of Hebard, 1927, but since there is no statement to that effect, it can only be considered congeneric rather than isogenotypic.

[33] Cf. *Heteronyx* Saussure.

[34] *Cf.* remarks under *Agenioxenus* Ashmead, 1902.

Brethesia Schrottky, 1909.[35] An. Soc. Cien. Argentina, LXVIII, p. 243. [Three species.]

TYPE: *Pepsis dimidiata* Fabricius, 1805 [= *Pepsis* (*Brethesia*) *dimidiata* Fabricius]. (Original designation.)

Calagenia Banks, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, pp. 40, 72, (Jan. 1934). [Three species.]

TYPE: *Calagenia hermosa* Banks, 1934. (Original designation.)

Caliadurgus new name for *Calicurgus* Lepeletier, 1845 not of Brullé, 1833.

TYPE: *Sphex hyalinata* Fabricius, 1793 [= *Caliadurgus hyalinatus* (F.)].

Isogenotypic with *Calicurgus* Lepeletier, 1845 not of Brullé, 1833, *q.v.*

Calicurgus Brullé, 1833.[36] Expédition Scientifique de Morée, III, Zool.: Anim. Artic., p. 364, (1833 [1836]).[37]

TYPE: *Pompilus annulatus* Fabricius, 1805 [i.e. *Sphex annulata* Fabricius, 1798 = *Cryptocheilus* (*Cryptocheilus*) *spectabile annulatile* (Richards)]. (Monobasic.)

Isogenotypic with *Cryptocheilus* Panzer, 1806 and *Cryptochilus* Rafinesque, 1815, *q.v.*

Calicurgus Lepeletier, 1845 not of Brullé, 1833. [Roret's Suite à Buffon], Hist. Nat. Insect., Hymén., III, p. 397. [Twenty-eight species.]

TYPE: *Pompilus fasciatellus* Spinola, 1808 [i.e. *Sphex hyalinata* Fabricius, 1793 = *Calicurgus hyalinatus* (F.) = *Caliadurgus hyalinatus* (F.)]. (By designation of Kohl, 1884, Verh. k.k. Zool. Bot. Ges., XXXIV, p. 45.)

Isogenotypic with *Caliadurgus* new name, *q.v.*

Calopompilus Ashmead, 1900. Canad. Entom., XXXII, p. 188, (May 31, 1900).

TYPE: *Pompilus maculipennis* Smith, 1855 [= *Calopompilus maculipennis* Smith, 1855]. (Original designation.)

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[35] Schrottky proposed *Brethesia* as a new name to replace *Pepsis* Fabricius under the misimpression that the type of *Pepsis* was *Sphex arenaria* Fabricius, 1787 [i.e. *Sphex hirsuta* Scopoli, 1763 = *Sphex viatica* Linnaeus, 1758 = *Pompilus* [olim *Podalonia*] *viaticus* (L.)]. Malaise (1937, Ent. News, XLVIII, p. 132) also expresses the same views as Schrottky, but needless to say, their argument is invalid under our present system of nomenclature.

[36] Under his discussion of *Pompilus annulatus* Fabricius, Brullé remarks that ". . . Van der Linden, dans ses Observations sur les Hyménoptères d'Europe, avait indiqué que les dentelures des pattes postérieures de certains Pompiles pouvaient servir de division dans ce genre; M. Lepeletier de Saint Fargeau, dans ses travaux manuscrits, a formé sur ce caractère le genre *Calicurgus;* malheureusement ce caractère n'est pas toujours appréciable chez les mâles. Le *P*[*ompilus*] *annulatus* se rapporte à cette division."

[37] The imprint date of this volume is given as 1836, but according to Sherborne (1901, Ann. & Mag. Nat. Hist., (7), VIII, p. 336), pp. 1–288 were issued in 1832, and the remainder (pp. 289–400) appeared in 1833.

Ceratopales Schulz, 1906. Spolia Hymenopterologica, p. 174.
Emendation for, and isogenotypic with, *Ceropales* Latreille, 1796, *q.v.*

Ceratopompilus Bradley, 1944. Eos, Rev. Españ. Ent., xx, pp. 95, 97, (July 10, 1944). [Ten species.]
Type: *Pompilus sexmaculatus* Spinola, 1805 [= *Ferreoloïdes* (*Ceratopompilus*) *sexmaculata* (Spinola)]. (Original designation.)

Céropaleoïdes Radoszkowski, 1888. Bull. Soc. Imp. Nat. Moscou, (N. S.), ii, p. 486.
Type: *Ceropales Komarowii* Radoszkowski, 1886 [i.e. *Salius Humboldti* Dahlbom, 1845 = *Pseudopompilus humboldti* (Dahlbom)[38]. (Monobasic.)
Isogenotypic through synonymy with *Pseudopompilus* A. Costa, 1887, *q.v.* *V. et.* *Ceropalioïdes* Ashmead, 1902.

Ceropalioïdes Ashmead, 1902. Canad. Entom., xxxiv, p. 134.
Typographical error for, and isogenotypic with, *Ceropaleoides* Radoszkowski, 1888, *q.v.*

Ceropales Latreille, 1796.[39] Précis Car. Génér. Insectes, p. 123, (1796); [no species]. Hist. Nat. Gén. Part. Crust. Insect., iii, pp. 335, 339, (1802); [several species].
Type: *Evania maculata* Fabricius, 1775[40] [= *Ceropales maculatus* (F.)]. (By designation of Latreille, 1810, Considérations générales ... des Insectes, Tabl. Méth., p. 437.)
Isogenotypic with *Ceratopales* Schulz, 1906 and *Hypsiceraeus* Morice & Durrant, 1915, *q.v.*

Ceropalites Cockerell, 1906. Bull. Mus. Comp. Zoöl., Harvard Coll., l, p. 53, (June, 1906). [Fossil.]
Type: *Ceropalites infelix* Cockerell, 1906. (Monobasic.)

Chalcochares Banks, 1917.[41] Bull. Mus. Comp. Zoöl., Harvard Coll., lxi, p. 107, (May, 1917).
Type: *Psammochares hirsutifemur* Banks, 1914 [= *Chalcochares hirsutifemur* (Banks)]. (Monobasic.)

Chelaporus Bradley, 1944. Trans. Amer. Ent. Soc., lxx, p. 116, (July 31, 1944).
Type: *Pedinaspis anomalus* Banks, 1917 [= *Chelaporus anomalus* (Banks)]. (Original designation and monobasic.)

Chilochares Banks, 1941. Canad. Entom., lxxiii, pp. 119, 120, (Aug. 7, 1941). [Ten species.]
Type: [*Pseudagenia*] *birkmanni* Banks, 1910 [= *Chilochares birkmanni* (Banks)]. (Original designation.)

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[38] *Teste* Haupt, 1927, Deutsch. Ent. Zeitschr., Beiheft, p. 293.

[39] For a discussion of this name, see Pate, 1935, Ent. News, xlvi, p. 247.

[40] *Cf.* Malaise, 1937, Ent. News, xlviii, p. 132, footnote.

[41] Cf. *Agenioideus* and *Gymnochares*.

Chirodamus Haliday, 1837. Trans. Linn. Soc. London, XVII, (3), p. 326.
TYPE: *Chirodamus Kingii* Haliday, 1837. (Monobasic.)

Chrysagenia Haupt, 1941. Ann. & Mag. Nat. Hist., (11), VII, p. 72, (Jan. 24, 1941). [Two species.]
TYPE: *Agenia daphne* Smith, 1858 [= *Chrysagenia daphne* (Smith)]. (Original designation.)

Chrysobapta Haviland, 1931. Zoologica (New York), VII, p. 133, (Dec. 1931). [Nomen nudum.]

Chrysocurgus Haupt, 1937. Zeitschr. f. Naturwissen. (Halle), XCI, pp. 127, 134.
TYPE: *Sphex nitida* Fabricius, 1775[41a] [= *Chrysocurgus nitidus* (F.)]. (Original designation and monobasic.)

Chyphononyx Schulz, 1906. Spolia Hymenopterologica, p. 165.
Emendation for, and isogenotypic with, *Cyphononyx* Dahlbom, 1845, *q.v.*

Cirripepsis Banks, 1945. Bol. Entom. Venezol. (Caracas), IV, p. 82, (June 30, 1945). [Several species.]
TYPE: *Pepsis planifrons* Lucas, 1895 [= *Pepsis* (*Cirripepsis*) *planifrons* Lucas]. (Original designation.)

Clavelia Lucas, 1851.[42] Bull. Soc. Ent. France, (2), IX, p. lxxv, (1851). Ann. Soc. Ent. France, (2), X, pp. 418, 421, (1852).
TYPE: *Clavelia pompiliformis* Lucas [= *Ctenocerus pompiliformis* (Lucas)]. (Monobasic.)

Claveliella Arnold, 1932. Ann. Transvaal Mus., XV, pp. 44, 106, 115, (Oct. 1, 1932).
TYPE: *Claveliella Braunsi* Arnold, 1932. (Original designation and monobasic.)

Cliochares Banks, 1941. Proc. Acad. Nat. Sci. Philadelphia, XCII, p. 360, (April 28, 1941). [Two species.]
TYPE: *Gymnochares pulchellus* Banks, 1934 [= *Cliochares pulchellus* (Banks)]. (Original designation.)

Clistoderes Banks, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, p. 33, (Jan. 1934). [Four species.]
TYPE: *Priocnemis* (*Clistoderes*) *astarte* Banks, 1934. (Original designation.)

Conagenia Banks, 1934.[43] Proc. Amer. Acad. Arts & Sci., LXIX, pp. 39, 69, (Jan. 1934). [Five species.]
TYPE: *Pseudagenia williamsi* Rohwer [i.e. *Ageniella williamsi* Rohwer, 1919 = *Conagenia williamsi* (Rohwer)]. (Original designation.)

[41a] According to Haupt (*loc. cit.*), *Priocnemis wakefieldi* Kirby, 1881 is a synonym of *Sphex nitida* Fabricius, 1775.

[42] Cf. *Protoclavelia* Arnold, 1932.

[43] Bradley (1944, Notulae Naturae, Acad. Nat. Sci. Philadelphia, no. 145, p. 5) places *Conagenia* as a subgenus of *Pseudagenia*, i.e. *Auplopus*.

Cordyloscelis Arnold, 1935.[44] Ann. Transvaal Mus., XV, p. 417, (April 9, 1935). [Five species.]

TYPE: *Pompilus latipes* Bingham, 1902 [= *Cordyloscelis* (*Cordyloscelis*) *latipes* (Bingham)]. (Original designation.)

Cosmiaporus Bradley, 1944. Trans. Amer. Ent. Soc., LXX, p. 108, (July 31, 1944).

TYPE: *Planiceps diverticulus* Fox, 1897 [= *Cosmiaporus diverticulus* (Fox)]. (Original designation and monobasic.)

Cressochilus Banks, 1941.[45] Canad. Entom., LXXIII, pp. 119, 120, (Aug. 7, 1941).

TYPE: *Pompilus* (*Priocnemis*) *nuperus* Cresson, 1867 [= *Cressochilus nuperum* (Cresson)]. (Original designation and monobasic.)

Cryptocheilus Panzer, 1806. Krit. Rev. Insektenf. Deutschl., II, p. 120, (1806). [Two species.]

TYPE: *Sphex annulata* Fabricius, 1798 not of Lichtenstein, 1796 [= *Salius annulatilis* Richards, 1935 = *Cryptocheilus* (*Cryptocheilus*) *spectabile annulatile* (Richards)]. (By designation of Westwood, Jan. 1840, Introd. Mod. Class. Insect., II, Gen. Synop., p. 82.)

Isogenotypic with *Calicurgus* Brullé, 1833 [not of Lepeletier, 1845] and *Cryptochilus* Rafinesque, 1815, *q.v.* V. et.: *Cryptochilinus* Haupt, 1935, *Mygnimia* Shuckard, 1840, *Salius* Fabricius, 1805, and *Stenoclavelia* Arnold, 1932.

Cryptochilinus Haupt, 1935.[46] [in Von Schulthess-Rechberg], Rev. Suisse Zool., XLII, (2), pp. 310–12, (Feb. 2, 1935).—Boll. Lab. Ent. R. Ist. Sup. Agr. Bologna, VII, p. 265, (July-Aug. 1935).

TYPE: *Sphex flava* Fabricius, 1775 [= *Cryptochilus* (*Cryptochilinus*) *flavus* (F.) = *Cryptocheilus* (*Mygnimia*) *flavum* (F.)]. (Original designation.)

Isogenotypic with *Mygnimia* Shuckard, 1840, *q.v.*

Cryptochilus Rafinesque, 1815. Analyse de la Nature . . ., (Palermo), p. 125.

Emendation for, and isogenotypic with, *Cryptocheilus* Panzer, 1806, *q.v.*

Cryptosalius Turner, 1917.[47] Proc. Ent. Soc. London, 1917, p. 76, (Nov. 24, 1917). [Two species.]

TYPE: *Pseudagenia rava* Bingham, 1896 [= *Cryptosalius ravus* (Bingham)]. (Original designation.)

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[44] Cf. *Lampropleurus* Arnold, 1935.

[45] Cf. *Priocnessus* Banks, 1934. *V. et.*: Bradley, 1944, Canad. Entom., LXXVI, pp. 150–152.

[46] On p. 310 this name is given as *Crypochilinus* but all subsequent mention of the name in this article is spelled *Cryptochilinus*. I have adopted this latter spelling, as the first is an obvious typographical error.

[47] Cf. *Trachyglyptus* Arnold and *Marimba* Pate.

Ctenagenia Saussure, 1892. [in Grandidier], Hist. Nat. Madagascar, XX, Hymén., I, p. 343. [Several species.]

TYPE: *Pompilus vespiformis* Klug, 1834 [= *Agenia* (*Ctenagenia*) *vespiformis* (Klug) = *Psammochares vespiformis* (Klug)[48]]. (By designation of Haupt, 1926, Deutsch. Ent. Zeitschr., Beiheft, p. 129.)

Ctenocerus Dahlbom, 1845.[49] Hymen. Europ., I, p. 456.

TYPE: *Ctenocerus Klugi* Dahlbom, 1845. [= *Ctenocerus* (*Ctenocerus*) *Klugi* Dahlbom]. (Monobasic.)

Ctenostegus Haupt, 1930. Mitt. Zool. Mus. Berlin, XVI, Heft 5, p. 685, (Dec. 15, 1930). [Two species.]

TYPE: *Sphex cingulata* Fabricius, 1775 [= *Ctenostegus cingulatum* (F.)]. (Original designation.)

Cyemagenia Arnold, 1934. Ann. Transvaal Mus., XV, pp. 289, 380, (Aug. 1, 1934). [Six species.]

TYPE: *Pseudagenia kloofensis* Cameron, 1905 [= *Cyemagenia kloofensis* (Cameron)]. (Original designation.)

Cyphononyx Dahlbom, 1845.[50] Hymen. Europ., I, p. 461. [Four species.]

TYPE: *Sphex flavicornis* Fabricius, 1781 [= *Cyphononyx flavicornis* (F.)]. (By designation of Arnold, 1932, Ann. Transvaal Mus., XIV, p. 294.)

Isogenotypic with *Chyphononyx* Schulz, 1906 and *Cyphonyx* Fox, 1896, *q.v.*

Cyphonyx Fox, 1896. Proc. Acad. Nat. Sci. Philadelphia, 1896, p. 551.

Lapsus calami for, and isogenotypic with, *Cyphononyx* Dahlbom, 1845, *q.v.*

Dasyclavelia Haupt, 1929.[51] Mitt. Zool. Mus. Berlin, XV, (1), p. 115, (April, 1929).

TYPE: *Pompilus namanus* Bischoff, 1913 [= *Dasyclavelia namana* (Bischoff) = *Parapompilus* (*Dasyclavelia*) *namanus* (Bischoff)]. (Original designation and monobasic.)

Dentagenia Haupt, 1933. Bull. Mus. Hist. Nat. Belgique (Bruxelles), IX, no. 47, p. 4.

TYPE: *Salius madraspatanus* Bingham, 1897 [i.e. *Pompilus madraspatanus* F. Smith, 1855 = *Dentagenia madraspatana* (Smith)]. (Original designation and monobasic.)

Isogenotypic with *Dimorphonyx* Haupt, 1938 not of Seyrig, 1932, *q.v.*

Derochilus Banks, 1941. Canad. Entom., LXXIII, pp. 119, 120, (Aug. 7, 1941).

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[48] *Teste* Haupt, 1930, Bol. Lab. Ent. Ist. Sup. Agr. Bologna, VI, p. 55. *V. et.* Arnold, 1934, Ann. Transvaal Mus., XV, p. 283.

[49] Cf. *Clavelia* Lucas, 1851. *V. et.*: Bradley, 1944, Trans. Amer. Ent. Soc., LXX, pp. 30–32; and *Protoclavelia* Arnold, 1932.

[50] *Cf.* remarks under *Monodontonyx* Haupt, 1929. V. et.: *Pseudosalius* Ashmead, 1904.

[51] *Teste* Arnold, 1934, Ann. Transvaal Mus., XV, p. 389.

Type: [*Pompilus* (*Priocnemis*)] *validus* Cresson, 1867 [=*Derochilus validum* (Cresson)]. (Original designation and monobasic.)

Derochorses Banks, 1941. Occ. Pap. Bernice P. Bishop Mus. (Honolulu), xvi, no. 10, pp. 232, 235, (Sept. 2, 1941).
Type: *Derochorses seminiger* Banks, 1941. (Monobasic.)

Deuteragenia Sustera, 1913.[52] Verh. k. k. Zool.-Bot. Ges. Wien, lxii, p. 191. [Proposed as a new name for *Agenia* Schiødte, 1837 not of Descourtilz, 1825.]
Type: *Sphex variegata* Linnaeus, 1758 [=*Deuteragenia variegata* (L.)=*Dipogon* (*Dipogon*) *variegatus* (L.)]. (Original designation.)
Isogenotypic with *Agenia* Schiødte, 1837 not of Descourtilz, 1825, *Pogonius* Dahlbom, 1845 not of Leach, 1815 and *Anoplius* Lepeletier, 1845 not of Dufour, 1834, *q.v.*

Dichelonyx Haupt, 1938 not of Harris, 1826. Ark. Zool. (Stockholm), xxx, N:o 4, p. 4, (Oct. 24, 1938).
Type: *Priocnemis* (*Cyphononyx*) *concolor* Taschenberg, 1869 [=*Dichelonyx concolor* (Taschenberg)=*Java concolor* (Taschenberg)]. (Original designation and monobasic.)
Isogenotypic with *Java* new name, *q.v.*

Dicyrtoma Bradley, 1944. Eos, Rev. Españ. Entom., xx, p. 93, (July 10, 1944).
Lapsus calami for, and isogenotypic with, *Dicyrtomus* Haupt, 1930; *v. et. Paracyphononyx* Gribodo, 1884.

Dicyrtomalis Bradley, 1944. Notulae Naturae, Acad. Nat. Sci. Philadelphia, no. 145, p. 11, (Oct. 18, 1944). [Two species.]
Type: *Pompilus connexus* Cresson, 1869 [=*Dicyrtomalis connexa* (Cresson)]. (Original designation.)

Dicyrtomellus Gussakovskij, 1935.[53] Konowia, xiv, p. 135, (June 15, 1935).
Type: *Pompilus cingulatus* Rossi [i.e. *Sphex cingulata* Rossi, 1790 not of Fabricius, 1775=*Pompilus luctuosus* Mocsary, 1878=*Dicyrtomellus* (*Dicyrtomellus*) *luctuosus* (Mocsary)]. (Original designation.)

Dicyrtomus Haupt, 1927. Deutsch. Ent. Zeitschr., 1926–27, Beiheft, p. 150 (Feb. 20, 1927), p. 256 (Oct. 1, 1927). [Four species.]
Type: *Pompilus ruficrus* Klug, 1834 [=*Dicyrtomus ruficrus* (Klug)=*Paracyphononyx ruficrus* (Klug)]. (Original designation.)
Isogenotypic through synonymy with *Paracyphononyx* Gribodo, 1884 and *Dicyrtoma* Bradley, 1944, *q.v.*

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[52] *Cf. Dipogon* Fox, 1897 of which this is a synonym; *v. et. Agriogenia* Banks, 1919; and discussion of *Dipogon* Fox in appendix.

[53] Cf. *Asthenoctenus* Arnold and *Asthenoctenidia* new name.

Dimorphonyx Haupt, 1938[54] not of Seyrig, 1932. Ark. Zool. (Stockholm), XXX, A, n:o 4, p. 5, (Oct. 24, 1938).

TYPE: *Pompilus madraspatanus* Smith, 1855 [=*Dimorphonyx madraspatanus* (Smith)=*Dentagenia madraspatana* (Smith)].

Isogenotypic with *Dentagenia* Haupt, 1933, *q.v.*

Dinagenia Banks, 1934.[55] Proc. Amer. Acad. Arts & Sci., LXIX, pp. 39, 66, (Jan., 1934).

TYPE: *Dinagenia apollo* Banks, 1934. (Monobasic.)

Dinocnemis Banks, 1925. Bull. Mus. Comp. Zoöl., Harvard Coll., LXVII, p. 336, (Nov. 1925). [Three species.]

TYPE: *Pompilus* (*Priocnemis*) *fortis* Cresson, 1867 [=*Priocnemis* (*Dinocnemis*) *fortis* (Cresson)=*Dinocnemis fortis* (Cresson)]. (By designation of Bradley, 1944, Canad. Entom., LXXVI, p. 132.)

Dinopepsis Banks, 1945. Bol. Entom. Venezol. (Caracas), IV, p. 83, (June 30, 1945). [Several species.]

TYPE: *Pepsis grossa* Fabricius [i.e. *Sphex grossa* Fabricius, 1789=*Pepsis* (*Dinopepsis*) *grossa* (F.)]. (Original designation.)

Dinosalius Banks, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, p. 27, (Jan., 1934). [Three species.]

TYPE: *Calicurgus javanus* Lepeletier, 1845 [=*Monodontonyx* (*Dinosalius*) *javanus* (Lepeletier)=*Leptodialepis javana* (Lepeletier)[56]]. (Original designation.)

Diplonyx Saussure, 1887.[57] Societas Entomologica (Zurich), II, p. 3, (April, 1887). [Two species.]

TYPE: *Cyphononyx* (*Diplonyx*) *campanulatus* Saussure, 1887 [=*Diplonyx campanulatus* (Saussure)]. (By designation of Haupt, 1938, Ark. Zool. (Stockholm), 30 A, n:o 4, p. 4.)

Dipogon Fox, 1897.[58] Proc. Acad. Nat. Sci. Philadelphia, 1897, p. 241.

TYPE: *Dipogon populator* Fox, 1897 [=*Dipogon* (*Dipogon*) *populator* Fox]. (Original designation and monobasic.)

Dolichocurgus Haupt, 1937. Zeitschr. f. Naturwissen. (Halle), XCI, pp. 126, 128. [Three species.]

TYPE: *Pompilus eupterus* Taschenberg, 1869 [=*Dolichocurgus eupterus* (Taschenberg)]. (Original designation.)

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[54] Proposed as a new name for *Dentagenia* Haupt, 1933, apparently under the impression that that name was a homonym. However, so far as I can determine *Dentagenia* was never used prior to Haupt's proposal of it in 1933.

[55] Haupt (1938, Notes Ent. Chin., Mus. Heude (Shanghai), V, p. 38) states that *Dinagenia* Banks, 1934 is identical with *Lissocnemis* Kohl, 1906.

[56] *Teste* Haupt, 1941, Ann. & Mag. Nat. Hist., (11), VII, p. 55.

[57] Haupt states (1938, *loc. cit. sup.*) that *Monodontonyx* Haupt, 1929 is a synonym of *Diplonyx* Saussure, 1887.

[58] *Cf.* discussion of *Dipogon* Fox in appendix.

Drepanaporus Bradley, 1944. Trans. Amer. Ent. Soc., LXX, p. 109, (July 31, 1944).

TYPE: *Planiceps collaris* Cresson, 1865 [=*Drepanaporus collaris* (Cresson)]. (Original designation and monobasic.)

Dromochares Haupt, 1930. Mitt. Zool. Mus. Berlin, XVI, pp. 761, 769, (Dec. 15, 1930).

TYPE: *Eidopompilus* (?) *premnopterus* Kohl, 1900 [=*Dromochares premnopterus* (Kohl)]. (Original designation and monobasic.)

Dromopompilus Heymons, 1915.[59] Sitzber. Ges. Naturforsch. Freund., Berlin, Jahrg. 1915, no. 7, p. 301. [Two species.]

TYPE: *Dromopompilus bischoffi* Heymons, 1915. (Original designation.)

Eidolopompilus Turner, 1927. Ann. & Mag. Nat. Hist., (9), XX, p. 551; (Nov. 1927). [Four species.]

Emendation for, and isogenotypic with, *Eidopompilus* Kohl, 1899, *q.v.*

Eidopompilus Kohl, 1899.[60] Ann. k. k. Naturhist. Hofmus. Wien, XIV, p. 305.

TYPE: *Eidopompilus Braunsii* Kohl, 1899 [= *Eidopompilus* (*Eidopompilus*) *braunsii* Kohl]. (Monobasic.)

Isogenotypic with *Eidolopompilus* Turner, 1927 and *Idopompilus* Haupt, 1930, *q. v.*

Elaphrosyron Haupt, 1929. Mitt. Zool. Mus. Berlin, XV, Heft 1, p. 120, (April, 1929 [genus differentiated in key]); Heft 3/4, p. 596, (Jan. 1930 [genus and species characterized]).

TYPE: *Elaphrosyron heinrichi* Haupt, 1930. (Original designation and monobasic.)

Entypus Dahlbom, 1844. Hymen. Europ., I, p. 35.

TYPE: *Entypus ochrocerus* Dahlbom, 1844. (Monobasic.)

Entypus Saussure, 1867 not of Dahlbom, 1844. Reise Novara, Zool., II, 1, Hymen., p. 50.

TYPE: *Entypus cephalotes* Saussure, 1867 [= *Hypoferreola cephalotes* (Saussure)]. (Monobasic.)

Isogenotypic with *Hypoferreola* Ashmead, 1902, *q.v.*

Eoferreola Arnold, 1935.[61] Ann. Transvaal Mus., XV, p. 442, (April 9, 1935).

TYPE: *Anoplius soleanus* Cameron, 1905 [= *Eoferreola* (*Eoferreola*) *soleana* (Cameron)]. (Original designation and monobasic.)

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[59] Arnold (1936, Ann. Transvaal Mus., XVIII, p. 115) considers *Dromopompilus* Heymons to be a synonym of *Pseudopedinaspis* Brauns, but I doubt very much if this is correct. For a recent discussion of *Dromopompilus*, see Bradley (1944, Trans. Amer. Ent. Soc., LXX, p. 34 *et seq.*).

[60] Cf. *Jansea* Cameron, 1910, and *Tomonotulus* Arnold, 1936.

[61] Cf. *Paraferreola* Sustera, 1913 and *Tea* new subgenus.

Eopompilus Gussakovskij, 1933. Ark. Zool. (Stockholm), XXIV A, n:o 10, p. 34, (Jan. 27, 1933). [Two species.]

Type: *Eopompilus orientalis* Gussakovskij, 1933. (Original designation.)

Epiclinotus Haupt, 1929. Mitt. Zool. Mus. Berlin, XV, Heft 1, p. 191, (April, 1929).

Type: *Epiclinotus erythrurus* Haupt, 1929. (Original designation and monobasic.)

Epipompilus Kohl, 1884.[62] Verh. Zool.-Bot. Ges. Wien, XXXIV, p. 57, (August, 1884). [Two species.]

Type: *Epipompilus Maximiliani* Kohl, 1884. (By designation of Ashmead, 1900, Canad. Entom., XXXII, p. 152.)

Episyron Schiødte, 1837. Krøyer's Naturhistorisk Tidsskrift (Kjøbenhavn), I, p. 341.

Type: *Sphex rufipes* Linnaeus, 1758 [= *Episyron rufipes* (L.)]. (Monobasic.)

Isogenotypic with *Epizuron* Ashmead, 1902, *q.v.* V. et.: *Spilopompilus* Ashmead, 1902.

Epizuron Ashmead, 1902. Canad. Entom., XXXIV, p. 82, (April 5, 1902).

Type: *Sphex rufipes* Linnaeus, 1758 [= *Epizuron rufipes* (L.) = *Episyron rufipes* (L.)]. (Original designation.)

Lapsus calami for, and isogenotypic with, *Episyron* Schiødte, 1837, *q.v.*

Eremocurgus Haupt, 1937. Zeitschr. f. Naturwissen. (Halle), XCI, pp. 127, 133. [Two species.]

Type: [*Priocnemis*] *ephippiatus* F. Smith, 1868[63] [= *Eremocurgus ephippiatus* (Smith)]. (Original designation.)

Euclavelia Arnold, 1932.[64] Ann. Transvaal Mus., XV, pp. 44, 106, 112, (Oct. 1, 1932).

Type: *Micropteryx fasciatus* Smith, 1851 [= *Euclavelia fasciata* (Smith)]. (Original designation and monobasic.)

Euplaniceps Haupt, 1930.[65] Mitt. Zool. Mus. Berlin, XVI, Heft 5, pp. 724, 751, (Dec. 15, 1930).

Type: *Planiceps variipennis* Perty, 1833 [= *Euplaniceps* (*Euplaniceps*) *variipennis* (Perty)]. (Original designation and monobasic.)

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[62] *Cf.* Bradley, 1944, Trans. Amer. Ent. Soc., LXX, p. 145.

[63] Haupt merely states that the type of *Eremocurgus* is "*E. ephippiatus* Sm." Smith, however, described two *ephippiatus*: (1) *Priocnemis ephippiatus* in 1868 from Australia; and (2) *Pompilus ephippiatus* from India in 1879. Inasmuch as Haupt's paper deals with the Australian fauna, I have assumed that *Priocnemis ephippiatus* Smith, 1868, is the correct genotype.

[64] *Cf.* Grünwaldt, 1933, Entom. Meddel., XVIII, pp. 252–258.

[65] Cf. *Pholidoporus* Bradley, 1944.

Eupompiloides Gussakovskij, 1935. Konowia, xiv, p. 141, (June 15, 1935).
TYPE: *Pompilus moestus* Klug, 1834 [= *Pompiloides* (*Eupompiloides*) *moestus* (Klug) = *Ferreoloides* (*Ferreoloides*) *moesta* (Klug)[66]]. (Monobasic.)
Isogenotypic with *Ferreoloides* Haupt, 1929, *q.v.*

Euryzonotulus Arnold, 1937. Ann. Transvaal Mus., xix, p. 38, (Nov. 8, 1937).
TYPE: *Euryzonotulus nigeriensis* Arnold, 1937. (Original designation and monobasic.)

Evagetes Lepeletier, 1845. Hist. Nat. Insect., Hymén., iii, p. 390.
TYPE: *Evagetes bicolor* Lepeletier, 1845 [= *Aporus dubius* Van der Linden, 1827 = *Psammochares* (*Evagetes*) *dubius* (Van der Linden)[67]]. (Monobasic.)

Evagethes F. Smith, 1858. Catal. British Foss. Hymen. Brit. Mus., pp. 53, 79.
Emendation or *lapsus calami* for, and isogenotypic with, *Evagetes* Lepeletier, 1845, *q.v.*

Eyagates Lucas, 1852. Ann. Soc. Ent. France, (2), x, p. 418.
Typographical error for *Evagetes* Lepeletier, 1845, *q.v.*

Fabriogenia Banks, 1941. Occ. Pap. Bernice B. Bishop Mus. (Honolulu), xvi, no. 10, p. 240, (Sept. 2, 1941). [Several species.]
TYPE: *Fabriogenia incompta* Banks, 1941. (Original designation.)

Ferreola Lepeletier, 1845.[68] [Roret's Suite á Buffon], Hist. Nat. Insect., Hymén., iii, p. 467.
TYPE: *Ferreola algira* Lepeletier, 1845. (Monobasic.)

Ferreola Auctt. not of Lepeletier, 1845.
See *Eoferreola* Arnold, 1935 and *Tea* new subgenus.

Ferreoloides Haupt, 1929.[69] Mitt. Zool. Mus. Berlin, xv, Heft 1, pp. 150, 153, (April, 1929). [Four species.]
TYPE: *Pompilus moestus* Klug, 1834 [= *Pompiloides* (*Ferreoloides*) *moestus* (Klug) = *Ferreoloides* (*Ferreoloides*) *moesta* (Klug)[70]]. (By designation of Bradley, 1944, Eos, xx, p. 95.)
Isogenotypic with *Eupompiloides* Gussakovskij, 1935, *q.v.*

Ferreolomorpha Ashmead, 1900. Canad. Entom., xxxii, p. 188, (May 31, 1900).
TYPE: *Priocnemis pedestris* Smith [i.e. *Pompilus pedestris* F. Smith, 1855 = *Ferreolomorpha pedestris* (Smith)[71]]. (Original designation.)

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[66] *Teste* Bradley, 1944, Eos, Rev. Españ. Ent., xx, p. 96.

[67] *Teste* Haupt, 1927, Deutsch. Ent. Zeitschr., Beiheft, p. 228.

[68] Cf. *Platyderes* Guérin, 1844; *Pseudoferreola* Radoszkowski, 1888; *Aporinus* Ashmead, 1902; *Prosalius* Aurivillius, 1907.

[69] Cf. *Ceratopompilus* Bradley, 1944.

[70] *Teste* Bradley, 1944, Eos, Rev. Españ. Ent., xx, p. 96.

[71] Banks (1934, Proc. Amer. Acad. Arts & Sci., lxix, p. 86) places *Pompilus pedestris* Smith in "*Paracyphonyx*" (i.e. *Paracyphononyx*).

Foximia Banks, 1945. Bol. Entom. Venezol. (Caracas), IV, p. 97, (June 30, 1945). [Several species.]

TYPE: *Pompilus scrupulus* Fox, 1897 [= *Priochilus* (*Foximia*) *scrupulum* (Fox)]. (Original designation.)

Galactopterus Arnold, 1937. Ann. Transvaal Mus., XIX, p. 32, (Nov. 8, 1937). [Three species.]

TYPE: *Galactopterus rufipes* Arnold, 1937. (Original designation.)

Giganteopepsis Lucas, 1917. Arch. Naturgesch., LXXXIII, A 5, pp. 10, 41. [Numerous species.]

TYPE: *Pepsis gigantea* Lucas, 1895 [= *Pepsis* (*Giganteopepsis*) *gigantea* Lucas]. (Original designation.)

Gilbertella Turner, 1917 not of Waite, 1902,[72] not of Eigenmann, 1903.[73] Ann. & Mag. Nat. Hist., (8), XIX, p. 150, (Jan. 1917). [Two species.]

TYPE: *Planiceps umbraticus* Turner, 1910 [= *Homonotus* (*Gilbertella*) *umbraticus* (Turner) = *Gilbertellana umbratica* (Turner)]. (Original designation.)

Isogenotypic with *Gilbertellana* new name, *q.v.*

Gilbertellana new name for *Gilbertella* Turner, 1917 not of Waite, 1902[72] not of Eigenmann, 1903.[73]

TYPE: *Planiceps umbraticus* Turner, 1910 [= *Gilbertellana umbratica* (Turner)].

Isogenotypic with *Gilbertella* Turner, 1917 not of Waite, 1902, *q.v.*

Gonaporus Ashmead, 1902.[74] Canad. Entom., XXXIV, p. 88, (April, 1902).

TYPE: *Pompilus gracilis* Klug, 1834 [= *Gonaporus gracilis* (Klug)]. (Original designation.)

Gymnochares Banks, 1917. Bull. Mus. Comp. Zoöl., Harvard Coll., LXI, pp. 107, 108, (May, 1917). [Two species.]

TYPE: *Psammochares birkmanni* Banks, 1910 [= *Gymnochares birkmanni* (Banks)]. (By present designation.)

Hadropompilus Arnold, 1934. Ann. Transvaal Mus., XV, p. 397, (Aug. 1, 1934).

TYPE: *Hadropompilus Braunsi* Arnold, 1934. (Original designation and monobasic.)

Haploneura Kohl, 1884 not of Loew, 1850. Verh. k. k. Zool.-Bot. Ges. Wien, XXXIV, pp. 37, 47, (August, 1884).

TYPE: *Haploneura apogona* Kohl, 1884 [= *Haploneurion apogonum* (Kohl)]. (Original designation and monobasic.)

Isogenotypic with *Haploneurion* Kohl, 1885 and *Hoploneurion* Ashmead, 1902, *q.v.* V. et.: *Aploneura* Ruiz, 1933, *Aploneurion* Ruiz, 1933, and *Aploneuta* Ruiz, 1933.

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[72] Rec. Australian Mus., IV, p. 182, (1902).

[73] Smithson. Misc. Coll., XLV, p. 147, (1903).

[74] *Cf.* Haupt, 1930, Mitt. Zool. Mus. Berlin, XVI, pp. 770–775.

Haploneurion Kohl, 1885. Ent. Nachr., XI, p. 163, (June, 1885).

TYPE: *Haploneura apogona* Kohl, 1884 [= *Haploneurion apogonum* (Kohl)]. (By designation of Kohl, 1884, Verh. k. k. Zool.-Bot. Ges. Wien, XXXIV, p. 47; proposed as a new name for *Haploneura* Kohl, 1884 not of Loew, 1850.)

Isogenotypic with *Haploneura* Kohl, 1884 not of Loew, 1850 and *Hoploneurion* Ashmead, 1902, *q.v.* V. et.: *Aploneura* Ruiz, 1933, *Aploneurion* Ruiz, 1933, and *Aploneuta* Ruiz, 1933.

Hauptiella Arnold, 1936.[75] Ann. Transvaal Mus., XVIII, p. 427, (May 25, 1936).

TYPE: *Apareia multipicta* Arnold, 1935 [= *Hauptiella multipicta* (Arnold)]. (Monobasic.)

Hemipepis Bradley, 1944. Notulae Naturae, Acad. Nat. Sci. Philadelphia, no. 145, p. 7, (Oct. 18, 1944).

Lapsus calami for *Hemipepsis* Dahlbom, 1844, *q.v.*

Hemipepsis Dahlbom, 1844.[76] Hymen. Europ., I, p. 123. [Three species.]

TYPE: *Hemipepsis capensis* Dahlbom, 1844 [77] [= *Hemipepsis* (*Hemipepsis*) *capensis* Dahlbom]. (By designation of Ashmead, 1900, Canad. Entom., XXXII, p. 187.)

Hemipogonius Saussure, 1892. [in Grandidier], Hist. Nat. Madagascar, XX, Hymén., I, p. 334.

TYPE: *Priocnemis venustipennis* Saussure, 1891 [= *Pogonius* (*Hemipogonius*) *venustipennis* (Saussure) = *Priocnemis venustipennis* Saussure [78]]. (Monobasic.)

Hemisalius Saussure, 1892. [in Grandidier], Hist. Nat. Madagascar, XX, Hymén., I, p. 313.

TYPE: *Salius* (*Hemisalius*) *albistylus* Saussure, 1892 [*Homonotus* (*Homonotus*) *albistylus* (Saussure) [79]]. (Monobasic.)

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[75] Proposed for *Apareia* Arnold, 1935 (Ann. Transvaal Mus., XV, p. 448) not of Haupt, 1929.

[76] Cf. *Tetraodontonyx* Ashmead, *Tetracryptocheilus* Zavattari, *Trichonyx* Haupt, *Pachynimia* Haupt, *Moropepsis* Banks, *Pallosoma* Lepeletier.

[77] There appears to be much confusion in the minds of various authors with regard to the type of *Hemipepsis*. Some believe *Sphex flava* Fabricius, 1775 from the East Indies is the type, but this species is the genotype of *Mygnimia* Shuckard, 1840; others consider the Mexican *Hemipepsis ustulata* Dahlbom to be the type. It is very evident that these three species originally included in *Hemipepsis* are not all congeneric: they need further careful study to determine their correct taxonomic position.

[78] *Teste* Banks (1941, Proc. Acad. Nat. Sci. Phila., XCII, p. 344) who apparently does not believe *Hemipogonius* worthy of even subgeneric rank.

[79] *Teste* Turner, 1917, Ann. & Mag. Nat. Hist., (8), XIX, pp. 147–148. *V. et.*: Schulz, Zool. Ann., IV, p. 131, (1909).

Herpetosphex Arnold, 1940. Journ. Ent. Soc. South Africa, III, p. 32, (Sept. 1940).

TYPE: *Herpetosphex staphylinoides* Arnold, 1940. (Original designation and monobasic.)

Heterodontonyx Haupt, 1935. [in Von Schulthess-Rechberg], Rev. Suisse Zool., XLII, (2), p. 307, (Feb. 2, 1935). [Two species.]

TYPE: *Heterodontonyx basalis* Haupt, 1935. (Original designation (by inference) and also by designation of Banks, 1941, Occ. Pap. Bernice P. Bishop Mus., XVI, (10), p. 234.)

Heteronyx Saussure, 1887 not of Guérin-Méneville, 1838 not of Saulcy, 1874. Societas Entomologica (Zurich), II, p. 3, (April, 1887).

TYPE: *Cyphononyx* (*Heteronyx*) *madecassus* Saussure, 1887 [= *Batozonellus madecassus* (Saussure)[80]]. (Monobasic.)

Homonotus Dahlbom, 1844.[81] Hymen. Europ., I, p. 35.

TYPE: *Sphex sanguinolenta* Fabricius, 1793 [= *Homonotus* (*Homonotus*) *sanguinolentus* (F.)]. (Monobasic (?) and by designation of Stein, 1859, Berlin. Ent. Zeitschr., IV, p. 60.)

Isogenotypic with *Isonotus* Dahlbom, 1842 not of Lepeletier & Serville, 1828, not of Perty, 1833, and *Wesmaelinius* A. Costa, 1887, *q.v.* *V. et.*: *Gilbertella* Turner, 1917, *Gilbertellana* new name, *Hemisalius* Saussure, 1892, and *Homotus* Smith, 1856.

Homotus F. Smith, 1855. Catal. Hymen. Ins. Brit. Mus., III, p. 168.

Lapsus calami for *Homonotus* Dahlbom, 1844, *q.v.*

Hoploneurion Ashmead, 1902. Canad. Entom., XXXIV, p. 132, (June 9, 1902).

Lapsus calami for, and isogenotypic with *Haploneurion* Kohl, 1885, *q. v.*

Hormopogonius Arnold, 1934. Ann. Transvaal Mus., XV, pp. 290, 379, (Aug. 1, 1934). [Two species.]

TYPE: *Hormopogonius tenuicornis* Arnold, 1934. (Original designation.)

Hovagenia Banks, 1941. Proc. Acad. Nat. Sci. Philadelphia, XCII, p. 343, (April 28, 1941). [Three species.]

TYPE: *Hovagenia saussurei* Banks, 1941. (Original designation.)

Hypoferreola Ashmead, 1902. Canad. Entom., XXXIV, p. 82, (April 5, 1902).

TYPE: *Ferreola cephalotes* Saussure [i.e. *Entypus cephalotes* Saussure, 1867 = *Hypoferreola cephalotes* (Saussure)]. (Original designation.)

Isogenotypic with *Entypus* Saussure, 1867 not of Dahlbom, *q.v.*

Hypsiceraeus Morice & Durrant, 1915.[82] Trans. Ent. Soc. London, 1915, pp. 403, 405.

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[80] *Teste* Arnold (1937, Ann. Transvaal Mus., XIX, p. 1) and Banks (1941, Proc. Acad. Nat. Sci. Philadelphia, XCII, p. 356).

[81] *Cf.* discussion of *Homonotus* Dahlbom in appendix.

[82] For a discussion of this name, see Pate, 1935, Ent. News, XLVI, p. 247.

TYPE: *Evania maculata* Fabricius, 1775 [= *Hypsiceraeus maculatus* (F.) = *Ceropales maculatus* (F.)]. (Original designation.)

Isogenotypic with *Ceropales* Latreille, 1796 and *Ceratopales* Schulz, 1906, *q.v.*

Idiopedinaspis Neave, 1939. Nomenclator Zoologicus, II, p. 762.

Typographical error for *Idopedinaspis* Haupt, 1930, *q.v.*

Idopedinaspis Haupt, 1930. Mitt. Zool. Mus. Berlin, XVI, Heft 5, pp. 724, 783, (Dec. 15, 1930). [No species.[83]]

TYPE: *Ferreola laevifrons* Cresson, 1869 [= *Idopedinaspis laevifrons* (Cresson) = *Psorthaspis laevifrons* (Cresson)]. (By designation of Haupt, March 18, 1937, Boll. Ist. Ent. R. Univ. Stud., Bologna, IX, p. 75.)

Isogenotypic with *Idiopedinaspis* Neave, 1939, *q.v.*

Idopompilus Haupt, 1930. Mitt. Zool. Mus. Berlin, XVI, Heft 5, pp. 761, 765, (Dec. 15, 1930).

Emendation for, and isogenotypic with, *Eidopompilus* Kohl, 1899, *q.v.*

Irenangelus Schulz, 1906.[85] Spolia Hymenopterologica, p. 175.

TYPE: *Irenangelus hornus* Schulz, 1906 [= *Agenia reversa* Smith, 1873[84] = *Irenangelus reversus* (Smith)]. (Monobasic.)

Isonotus Dahlbom, 1842[86], not of Lepeletier & Serville, 1828, not of Perty, 1833. Dispos. meth. Scand. Hymen., I, p. 3. [Two species.]

TYPE: *Sphex sanguinolenta* Fabricius, 1793 [= *Isonotus sanguinolentus* (F.) = *Homonotus* (*Homonotus*) *sanguinolentus* (F.)]. (By designation of Stein, 1859, Berlin. Ent. Zeitschr., IV, p. 60.)

Isogenotypic with *Homonotus* Dahlbom, 1844 and *Wesmaelinius* A. Costa, 1887, *q.v.*

Jansea Cameron, 1910. Ann. Transvaal Mus., II, p. 129, (Nov. 10, 1910).

TYPE: *Jansea longitarsis* Cameron, 1910[87] [= *Eidopompilus longitarsis* (Cameron)]. (Monobasic.)

Java new name for *Dichelonyx* Haupt, 1938 not of Harris, 1826.[88]

TYPE: *Priocnemis* (*Cyphononyx*) *concolor* Taschenberg, 1869 [= *Java concolor* (Taschenberg)].

Isogenotypic with *Dichelonyx* Haupt, 1938 not of Harris, 1833, *q.v.*

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[83] Haupt states, however, he has specimens of *Idopedinaspis* from Costa Rica, but mentions none by name.

[84] *Teste* Turner, 1917, Ann. & Mag. Nat. Hist., (8), XX, p. 357.

[85] Banks (1944, Zoologica (New York), XXIX, p. 108) places *Agenia reversa* Smith, 1873 in *Ageniella*. If this allocation of the species is correct, then *Ageniella* Banks, 1912 must fall as a synonym of *Irenangelus* Schulz, 1906.

[86] *Cf.* discussion of this name under *Homonotus* Dahlbom in appendix.

[87] Both Brauns (1917, Ann. Transvaal Mus., V, p. 243) and Arnold (1936, Ann. Transvaal Mus., XVIII, pp. 76–77), after an examination of the type, state that *Jansea longitarsis* Cameron is a species of *Eidopompilus* Kohl, 1899.

[88] Mass. Agr. Repos., X, p. 6, (1826).

Lampropleurus Arnold, 1935. Ann. Transvaal Mus., xv, p. 425, (April 9, 1935).

TYPE: *Cordyloscelis* (*Lampropleurus*) *ugandensis* Arnold, 1935. (Monobasic.)

Lepidocnemis Haupt, 1930. Mitt. Zool. Mus. Berlin, xvi, Heft 5, p. 725, (Dec. 15, 1930).

TYPE: *Lepidocnemis antiquus* Haupt, 1930 [= *Lepidocnemis antiqua* Haupt]. (Original designation and monobasic.)

Leptodialepis Haupt, 1929.[89] Treubia (Buitenzorg), x, (4), p. 465, (June, 1929). [Three species.]

TYPE: *Salius nicevillii* Bingham, 1896 [= *Leptodialepis nicevillii* (Bingham)]. (Original designation.)

Leuchimon Haupt, 1930. Mitt. Zool. Mus. Berlin, xvi, Heft 5, p. 792, (Dec. 15, 1930).

TYPE: *Leuchimon palmatus* Haupt, 1930. (Original designation and monobasic.)

Lissocnemis Kohl, 1906.[90] Denkschr. k. Akad. Wissen. Wien, Math.-Naturwiss. Kl., LXXI, p. 265.

TYPE: *Salius* (*Lissocnemis*) *irrasus* Kohl, 1906 [= *Lissocnemis irrasa* (Kohl)]. (Original designation and monobasic.)

Lophagenia Banks, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, pp. 40, 74, (Jan. 1934).

TYPE: *Pseudagenia erigone* Bingham, 1896 [= *Lophagenia erigone* (Bingham)]. (Original designation and monobasic.)

Lophopompilus Radoszkowski, 1887.[91] Hor. Soc. Ent. Ross., XXI, p. 42, (June 10, 1887). [Two species.]

TYPE: *Pompilus grandis* Eversmann, 1849 [= *Pompilus* (*Lophopompilus*) *grandis* Eversmann, 1849 = *Sphex samariensis* Pallas, 1771 [92] = *Lophopompilus samariensis* (Pallas) [93]]. (By designation of Ashmead, 1902, Canad. Entom., XXXIV, p. 84.)

Machaerothrix Haupt, 1938. Notes Ent. Chin., Mus. Heude (Shanghai), v, (5), p. 40, (July 25, 1938).

TYPE: *Machaerothrix coarctifrons* Haupt, 1938. (Original designation and monobasic.)

Macromerella Banks, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, p. 32 (Jan. 1934). [Three species.]

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[89] Haupt (1941, Ann. & Mag. Nat. Hist., (11), VII, p. 55) states that *Dinosalius* Banks, 1934 is a synonym of *Leptodialepis*.

[90] Haupt (1938, Notes Ent. Chin., Mus. Heude (Shanghai), v, p. 38) states that *Dinagenia* Banks, 1934 is a synonym of *Lissocnemis*.

[91] Cf. *Pompilogastra* Ashmead, 1902.

[92] *Teste* Haupt, 1927, Deutsch. Ent. Zeitschr., Beiheft, p. 231.

[93] *Cf.* Regan, 1923, Ann. Ent. Soc. Amer., XVI, pp. 177–194.

TYPE: "*M[acromerella] aureopilosa* Cam. = *honesta* Smith" [i.e. *Agenia honesta* Smith, 1860 = *Macromerella honesta* (Smith)]. (Original designation.)

Macromeris Lepeletier, 1831. Magasin de Zoologie, I, pt. 2, Class, IX: Insect., pls. 29, 30. [Two species.]
TYPE: *Macromeris splendida* Lepeletier, 1831. (By designation of Kohl, 1884, Verh. k. k. Zool.-Bot. Ges. Wien, XXXIV, p. 41.)

Malloscelis Haupt, 1935. Ark. Zool. (Stockholm), XXVII A, n:o 10, p. 4, (Feb. 4, 1935).
TYPE: *Salius formosus* F. Morawitz, 1889 [= *Malloscelis formosa* (F. Morawitz)]. (Monobasic.)

Marimba new genus for *Cryptosalius* Arnold, 1932 not of Turner, 1917.[94]
TYPE: *Cryptosalius contristans* Turner, 1918 [= *Marimba contristans* (Turner)].

Masisia Arnold, 1934. Ann. Transvaal Mus., XV, p. 395, (Aug. 1, 1934).
TYPE: *Masisia longipalpis* Arnold, 1934. (Original designation and monobasic.)

Maurillus F. Smith, 1855.[95] Catal. Hymen. Ins. Brit. Mus., III, p. 170.
TYPE: *Maurillus australis* F. Smith, 1855. (Monobasic.)

Melanaporus Ashmead, 1902.[96] Canad. Entom., XXXIV, p. 132, (June 9, 1902).
TYPE: *Planiceps euferatis* Fox [i.e. *Planiceps euferalis* Fox, 1891 = *Melanaporus euferalis* (Fox)]. (Original designation.)

Meracus Tournier, 1889. L'Ent. Genevois, I, p. 137 (June 15, 1889 [genus in key]); p. 156 (Sept. 15, 1889 [genus and species characterized]). [Two species.]
TYPE: *Pompilus bucephalus* Tournier, 1889 [= *Meracus bucephalus* (Tournier) = *Pedinaspis bucephala* (Tournier) [97]]. (By present designation.)

Meragenia Banks, 1934.[98] Proc. Amer. Acad. Arts & Sci., LXIX, pp. 39, 75, (Jan. 1934). [Three species.]
TYPE: *Pseudagenia imitator* Ashmead, 1905 [= *Meragenia imitator* (Ashmead)]. (Original designation.)

Micragenia Arnold, 1934. Ann. Transvaal Mus., XV, p. 286, (Aug. 1, 1934). [Two species.]
TYPE: *Micragenia calcarata* Arnold, 1934. (Original designation.)

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[94] *Cf.* Arnold, 1932–34, Ann. Transvaal Mus., XV, pp. 89, 104–106, 389–390. *V. et.* discussion of *Marimba* in appendix.

[95] A ghost.

[96] Cf. *Odontaporus* Bradley, 1944.

[97] *Teste* Haupt, 1938, Bol. Ist. Ent. R. Univ. Bologna, IX, p. 73.

[98] Arnold (1935, Occ. Pap. Rhodesian Mus., no. 4, p. 30) considers *Meragenia* Banks, 1934 to be merely a synonym of *Poecilagenia* Haupt, 1927.

Microdrapetes Arnold, 1937. Ann. Transvaal Mus., XIX, p. 30, (Nov. 8, 1937).
TYPE: *Microdrapetes bellus* Arnold, 1937. (Original designation and monobasic.)

Microferreola[99] Haupt, 1935. [in Von Schulthess-Rechberg], Rev. Suisse Zool., XLII, p. 321, (Feb. 2, 1935).
TYPE: *Microferreola rufithorax* Haupt, 1935. (Monobasic.)

Microphadnus Cameron, 1904.[100] Rec. Albany Mus., I, p. 212, (April, 4, 1904). [Two species.]
TYPE: *Microphadnus bicolor* Cameron, 1904. (By designation of Arnold, 1937, Ann. Transvaal Mus., XIX, p. 68.)

Micropterix Guérin-Méneville, 1844 not of Hübner, 1826 not of Stephens, 1835. Iconogr. Régn. Animal., VII, Insect., p. 435.
TYPE: *Sphex brevipennis* Fabricius, 1793 [=*Micropterix brevipennis* (F.) =*Parapompilus* (*Parapompilus*) *brevipennis* (F.)]. (Monobasic.)
Isogenotypic with *Micropteryx* Lepeletier 1845, not of Agassiz, 1831, not of Stephens, 1835 and *Parapompilus* Smith, 1855, *q.v.*

Micropteryx Lepeletier, 1845 not of Agassiz, 1831 not of Stephens, 1835. [Roret's Suite á Buffon], Hist. Nat. Insect., Hymén., III, p. 396.
TYPE: *Sphex brevipennis* Fabricius, 1793 [=*Micropteryx brevipennis* (F.) =*Parapompilus* (*Parapompilus*) *brevipennis* (F.)]. (Monobasic.)
Isogenotypic with *Micropterix* Guérin-Méneville, 1844 not of Hübner, 1826 and *Parapompilus* Smith, 1855, *q.v.*

Mikroferreola Haupt, 1935.
See *Microferreola* Haupt, 1935.

Mimocurgus Haupt, 1937. Zeitschr. f. Naturwissen. (Halle), XCI, pp. 128, 136.
TYPE: *Mimocurgus apicalis* Haupt, 1937. (Original designation and monobasic.)

Minagenia Banks, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, pp. 40, 64, (Jan. 1934). [Two species.]
TYPE: *Pseudagenia* (*Minagenia*) *brevicornis* Banks, 1934. (Original designation.)

Minotocyphus Banks, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, p. 112, (Jan. 1934). [Two species.]
TYPE: *Minotocyphus obesus* Banks, 1934. (Original designation.)

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[99] Haupt gave the name of the genus as *Mikroferreola* and that of the sole included species as *Microferreola rufithorax*. I have chosen to adopt the latter spelling inasmuch as this is more correct.

[100] Cf. *Plagioceps* Haupt, 1930 which is a synonym of *Microphadnus* according to Arnold (1937, Ann. Transvaal Mus., XIX, pp. 67–68).

Monodontonyx Haupt, 1929.[101] Rev. Zool. Bot. Afric., xvii, p. 202, (Sept. 15, 1929).

TYPE: *Monodontonyx helenae* Haupt, 1929 [= *Cryptochilus Gowdeyi* Turner, 1918 [102] = *Cyphononyx Gowdeyi* (Turner)]. (Monobasic.)

Morochares Banks, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, pp. 84, 98, (Jan. 1934).

TYPE: *Morochares fascipennis* Banks, 1934. (Monobasic.)

Moropepsis Banks, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, pp. 6, 8, (Jan. 1934).

TYPE: *Hemipepsis* (*Moropepsis*) *croesus* Banks, 1934. (Monobasic.)

Mygnimia Shuckard, 1840.[103] [In Swainson & Shuckard: Lardner's Cabinet Cyclopedia], On the History and Natural Arrangement of Insects, p. 179. [No species.] Smith, Catal. Hymen. Ins. Brit, Mus., III, p. 181, (1855). [Twenty-six species.]

TYPE: *Sphex flava* Fabricius, 1775 [= *Mygnimia flava* (F.) = *Cryptocheilus* (*Mygnimia*) *flavum* (F.) [104]]. (By designation of Ashmead, 1900, Canad. Entom., XXXII, p. 186.)

Isogenotypic with *Cryptochilinus* Haupt, 1935, *q.v.*

Myngynia Cameron, 1909. The Entomologist, XLII, p. 182, (July, 1909).

Typographical error for *Mygnimia* Shuckard, 1840, *q.v.*

Myrmecosalius Ashmead, 1903. Proc. Ent. Soc. Washington, v, p. 307, (June 13, 1903).

TYPE: *Myrmecosalius nigriceps* Ashmead, 1903. (Monobasic.)

Nannochilus Banks, 1944. Bull. Mus. Comp. Zoöl., Harvard Coll., XCIV, p. 171, (June, 1944). [Three species.]

TYPE: *Ageniella externa* Banks [i.e. *Pseudagenia externa* Banks, 1910 = *Nannochilus externum* (Banks)]. (Original designation.)

Nannopepsis Banks, 1945. Bol. Entom. Venezol. (Caracas), IV, p. 82, (June 30, 1945). [Several species.]

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[101] Haupt (1938, Ark. Zool. (Stockholm), 30 A, n:o 4, p. 4) sinks his *Monodontonyx* as a synonym of *Diplonyx* Saussure, 1887; Arnold (1932, Ann. Transvaal Mus., XIV, p. 396) places it as a synonym of *Cyphononyx* Dahlbom, 1845; and Banks (1941, Proc. Acad. Nat. Sci. Phila., XCII, pp. 336–340) considers it to be a discrete genus near *Cyphononyx*.

[102] *Teste* Arnold, 1932, Ann. Transvaal Mus., XIV, p. 396.

[103] Most authors regard Shuckard's original proposal of *Mygnimia* as a *nomen nudum* and credit the name to Smith, 1855, but Shuckard's description, though very brief, is sufficient to validate his proposal of the name. Moreover, Smith (1873, Ann. & Mag. Nat. Hist., XII, p. 256) states in unequivocal terms that the name *Mygnimia* must be accredited to Shuckard and not to him.

[104] *Mygnimia* may eventually prove to be a discrete genus.

TYPE: *Pepsis pruinosa* Lucas, 1895 [i.e. *Pepsis pruinosa* Mocsary, 1894 = *Pepsis* (*Nannopepsis*) *pruinosa* Mocsary]. (Original designation.)

Nannopompilus Ashmead, 1902. Canad. Entom., XXXIV, p. 82, (April 5, 1902).

TYPE: *Nannopompilus argenteus* Ashmead, 1902 [105] [i.e. *Pompilus argenteus* Cresson, 1867 = *Nannopompilus argenteus* (Cresson)]. (Original designation.)

Narochares Banks, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, pp. 84, 103, (Jan. 1934).

TYPE: *Narochares clavelina* Banks, 1934. (Monobasic.)

Nealgoa Brues, 1922.[106] Psyche, XXIX, p. 105, (June, 1922).

TYPE: *Nealgoa banksi* Brues, 1922. (Monobasic.)

Nemagenia Banks, 1944. Bull. Mus. Comp. Zoöl., Harvard Coll., XCIV, p. 179, (June, 1944).

TYPE: *Pompilus* (*Agenia*) *longulus* Cresson, 1867 [= *Ageniella* (*Nemagenia*) *longula* (Cresson)]. (Original designation and monobasic.)

Neoplaniceps Bradley, 1944.[107] Trans. Amer. Ent. Soc., LXX, p. 104, (July 31, 1944). [Two species.]

TYPE: *Planiceps tarsalis* Ashmead, 1900 [= *Aporus* (*Neoplaniceps*) *tarsalis* (Ashmead) = *Actenopoda* (*Neoplaniceps*) *tarsalis* (Ashmead)]. (Original designation.)

Notiochares Banks, 1917. Bull. Mus. Comp. Zoöl., Harvard Coll., LXI, pp. 107, 108, (May, 1917).

TYPE: *Pompilus philadelphicus* Lepeletier, 1845 [= *Notiochares philadelphicus* (Lepeletier)]. (Monobasic.)

Notocyphus Smith, 1855. Catal. Hymen. Ins. Brit. Mus., III, p. 172. [Three species.]

TYPE: *Notocyphus saevissimus* Smith, 1855. (By designation of Smith, 1873, Ann. & Mag. Nat. Hist., (4), XII, p. 49.)

Notoplaniceps Bradley, 1944.[107] Trans. Amer. Ent. Soc., LXX, p. 100, (July 31, 1944). [Three species.]

TYPE: *Aporus* (*Notoplaniceps*) *fenestralis* Bradley, 1944 [= *Actenopoda* (*Notoplaniceps*) *fenestralis* (Bradley)]. (Original designation.)

Odontaporus Bradley, 1944. Trans. Amer. Ent. Soc., LXX, p. 110, (July 31, 1944). [Six species.]

TYPE: *Planiceps notabilis* Smith, 1860 [108] [= *Odontaporus notabilis* (Smith) = *Melanaporus notabilis* (Smith) [109]]. (Original designation.)

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[105] In the collection of the United States National Museum is the following note by Rohwer: "This [*argenteus*] is probably Cresson, as Cresson described an *argenteus* and this is the species under the genus in the collection."

[106] *Cf.* Reid, 1939, Proc. R. Ent. Soc. London, (B), VIII, pp. 95–102.

[107] *Cf.* discussion of *Actenopoda* Ashmead, 1902. in appendix.

[108] Bradley states (Trans. Amer. Ent. Soc., LXX, p. 110) that the type of the genus is ". . . the species which I here identify as *Planiceps notabilis* Smith

Odontoderes Haupt, 1929 not of Schoenherr, 1823 not of Dejean, 1835. Mitt. Zool. Mus. Berlin, XV, (1), p. 184, (April, 1929).

Type: *Odontoderes politus* Haupt, 1929 [= *Quiris polita* (Haupt)]. (Monobasic.)

Isogenotypic with *Quiris* new name, *q.v.*

Olixon Cameron, 1887.[110] Biol. Centr.-Amer., Hymen., I, p. 412, (Aug 1887).

Type: *Olixon testaceum* Cameron, 1887. (Monobasic.)

Isogenotypic through synonymy with *Saphobethylus* Kieffer, 1911, *q.v.*

Onochares Banks, 1933. Psyche, XL, p. 9, (July 11, 1933). [Two species.

Type: *Onochares brazoria* Banks, 1933. (Original designation.)

Orientanoplius Haupt, 1935. [*in* Von Schulthess-Rechberg], Rev. Suisse Zool., XLII, (2), p. 315, (Feb. 2, 1935).[111] [Three species.]

Type: *Pompilus ignobilis* Saussure, 1867 [= *Orientanoplius ignobilis* (Saussure)]. (Original designation.)

Pachycurgus Haupt, 1937. Zeitschr. f. Naturwissensch. (Halle), XCI, pp. 127, 131, (1937). [Five species.]

Type: *Pompilus nubilipennis* Smith, 1855 [= *Pachycurgus nubilipennis* (Smith)]. (Original designation.)

Pachynimia Haupt, 1929. Rev. Zool. Bot. Afric., XVII, pp. 197, 202, (Sept. 15, 1929).

Type: *Priocnemis tinctor* Saussure, 1867 [= *Pachynimia tinctor* (Saussure) = *Hemipepsis* (*Hemipepsis*) *tinctor* (Saussure)[112]]. (Original designation and monobasic.)

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as represented by a male from Santa Ana, Costa Rica in the collection of the Academy of Natural Sciences of Philadelphia. In case this species proves not to be *notabilis*, it and not *notabilis* shall stand as genotype."

[109] Inasmuch as Bradley includes *Planiceps euferalis* Fox, 1891, the genotype of *Melanaporus* Ashmead, 1902, in his *Odontaporus*, I consider that the latter name should be regarded as a synonym of Ashmead's much earlier one. Indeed, Bradley remarks (Trans. Amer. Ent. Soc., LXX, p. 111) ". . . I have little doubt but that the name *Melanaporus* will eventually have to replace *Odontaporus*, for I think it will be found that its type species, *Planiceps euferalis* Fox, is the male of *cupripennis* Banks, since these are the only species of the tribe known from Jamaica."

[110] *Cf.* Turner & Waterston, 1917, Ann. & Mag. Nat. Hist., (8), XX, pp. 107–108. *V. et.*: Reid, 1939, Proc. R. Ent. Soc. London, (B), VIII, pp. 95–102.

[111] Also described as new: Ark. Zool. (Stockholm), 30 A, N:o 4, p. 16, (Oct. 24, 1938), with same species as type.

[112] *Teste* Arnold (1932, Ann. Transvaal Mus., XIV, p. 396) who considers that *Pachynimia* Haupt, 1929 and *Pallosoma* Lepeletier, 1845 are synonymous with the typical group of *Hemipepsis*. Arnold has listed (1932, Ann. Transvaal Mus., XIV, p. 344–345) *Priocnemis tinctor* Saussure, 1867 as a race of

Pallosoma Lepeletier, 1845.[113] [Roret's Suite à Buffon], Hist. Nat. Insect., Hymén., III, p. 492. [Six species.]

TYPE: *Pallosoma barbara* Lepeletier, 1845 [= *Hemipepsis* (*Pallosoma*) *barbara* (Lepeletier)]. (By designation of Ashmead, 1900, Canad. Entom., XXXII, p. 187.)

Parabatozonus Yasumatsu, 1936. Mushi, IX, p. 23, (Dec. 1936?).

TYPE: *Pompilus bilunatus* Smith, 1873 not of Haliday, 1836 [= *Pompilus hakodadi* Dalla Torre, 1897 = *Parabatozonus hakodadi* (Dalla Torre)]. (Original designation and monobasic.)

Parachyphononyx Schulz, 1906. Spolia Hymenopterologica, p. 168.

Emendation for, and isogenotypic with *Paracyphononyx* Gribodo, 1884, *q.v.*

Paraclavelia Haupt, 1930. Mitt. Zool. Mus. Berlin, XVI, Heft 5, p. 728, (Dec. 15, 1930).

TYPE: *Pompilus caffer* Kohl, 1886 [= *Paraclavelia caffra* (Kohl)]. (Original designation and monobasic.)

Paracyphononyx Gribodo, 1884. Ann. Mus. Civ. Stor. Nat. Genova, (2), I, p. 306.

TYPE: *Paracyphononyx melanicrus* Gribodo, 1884 [= *Pompilus ruficrus* Klug, 1834 [114] = *Paracyphononyx ruficrus* (Klug)]. (Monobasic.)

Isogenotypic with *Parachyphononyx* Schulz, 1906, and through synonymy with *Dicyrtomus* Haupt, 1927 and *Dicyrtoma* Bradley, 1944, *q.v.* V. et.: *Paracyphonyx* Ashmead, 1902, *Schistosalius* Saussure, 1892, and *Ferreolomorpha* Ashmead, 1900.

Paracyphonyx Ashmead, 1902.[115] Canad. Entom., XXXIV, p. 81, (April 5, 1902).

TYPE: *Paracyphonyx metemmensis* Magretti [i.e. *Paracyphononyx metemmensis* Magretti, 1884]. (Original designation.)

Paraferreola Sustera, 1913.[116] Verh. k. k. Zool.-Bot. Ges. Wien., LXII, pp. 181, 200. [Numerous species.]

Priocnemis brunniceps Taschenberg, 1869. The proper name for the species and variety is of course *Hemipepsis tinctor* (Sss.) and *H. tinctor* (Sss.) var. *brunniceps* (Tasch.).

[113] Haupt (1929, Rev. Zool. Bot. Afric., XVII, p. 197) regards *Pallosoma* as a discrete genus closely allied to *Mygnimia* (i.e. *Hemipepsis*) whereas Arnold (1932, Ann. Transvaal Mus., XIV, p. 396) considers it to be synonymous with nominate group of *Hemipepsis*.

[114] *Teste* Arnold, 1936, Ann. Transvaal Mus., XVIII, p. 432.

[115] Ashmead attributes *Paracyphonyx* to Magretti who, however, used the spelling *Paracyphononyx*. This name may thus be considered merely a *lapsus calami* for *Paracyphononyx* Gribodo, 1884.

[116] Sustera proposed *Paraferreola* as a new name for *Ferreola* F. Smith et Auctt., not of Lepeletier, 1845.

TYPE: *Paraferreola ursus* F.[117] [i.e. *Sphex ursus* Fabricius, 1793]. (Original designation.)

See *Eoferreola* Arnold, 1935 and *Tea* new subgenus.

Paraferreola Auctt. not of Sustera, 1913.

See *Eoferreola* Arnold, 1935 and *Tea* new subgenus.

Paragenia Bingham, 1896. Journ. Linn. Soc., Zool., XXV, p. 429.

TYPE: *Macromeris argentifrons* Smith, 1858 [= *Paragenia argentifrons* (Smith)]. (Monobasic.)

Paranoplius Haupt, 1929. Mitt. Zool. Mus. Berlin, XV, Heft 1, pp. 118, 144, (April, 1929).

TYPE: *Paranoplius separatus* Haupt, 1929. (Original designation and monobasic.)

Parapompilus Smith, 1855. Catal. Hymen. Ins. Brit. Mus., III, p. 176. [Four species.]

TYPE: *Pompilus brevipennis* Fabricius, 1804 [i.e. *Sphex brevipennis* Fabricius, 1793 = *Parapompilus* (*Parapompilus*) *brevipennis* (F.)]. (Proposed as a new name for, and therefore *ipso facto* with same genotypic species as, *Micropteryx* Lepeletier, 1845 not of Agassiz, 1831.)

Isogenotypic with *Micropterix* Guérin-Méneville, 1844 not of Hübner, 1825 and *Micropteryx* Lepeletier, 1845 not of Agassiz, 1831, *q.v.* *V. et.*: *Dasyclavelia* Haupt, 1929.

Parapsammoderes Arnold, 1937. Ann. Transvaal Mus., XIX, p. 70, (Nov. 8, 1937). [Two species.]

TYPE: *Psammoderes* (*Parapsammoderes*) *capensis* Arnold, 1937. (Present designation.)

Parasalius Banks, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, pp. 5, 21, (Jan. 1934). [Three species.]

TYPE: *Mygnimia anthracina* Smith, 1855 [= *Parasalius anthracinus* (Smith)]. (Original designation.)

Paratrichosalius Arnold, 1934. Ann. Transvaal Mus., XV, p. 392, (Aug. 1, 1934). [Three species.]

TYPE: *Trichosalius* (*Paratrichosalius*) *flavipennis* Arnold, 1934. (Present designation.)

Pedinaspis Kohl, 1884. Verh. Zool.-Bot. Ges. Wien, XXXIV, p. 55, (August, 1884).

TYPE: *Pompilus operculatus* Klug, 1835 [= *Pompilus* (*Pedinaspis*) *operculatus* (Klug) = *Pedinaspis operculata* (Klug)]. (Original designation.)

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[117] Schulz (1912, Berlin. Entom. Zeit., LVII, pp. 78–79) examined the type of *Sphex ursus* Fabricius, 1793 in the Copenhagener Zoologischen Universitätmuseum and states that it is a male Mutillid, possibly of the genus *Myrmilla*. As a consequence, *Paraferreola* is referable to the Mutillidae and another name must be used for this genus. Arnold's *Eoferreola* is available and for those forms hitherto known as *Paraferreola* in the restricted sense, the new subgeneric name *Tea* is proposed elsewhere.

Pepsis Fabricius, 1805.[119] Systema Piezatorum, p. 207. [Forty-seven species.]

TYPE: *Pepsis stellata* Fabricius[120] [i.e. *Sphex stellata* Fabricius, 1793 = (? *Sphex sanguiguttata* Christ, 1791) = *Pepsis* (*Pepsis*) *stellata* (Fabricius)]. (By designation of Latreille, 1810, Consideration generales . . . des Insectes, Tabl. Method., p. 437.)

Phanagenia Banks, 1933. Psyche, XL, p. 18, (July 11, 1933).[121] [Three species.]

TYPE: *Phanagenia osceola* Banks, 1933. (Original designation.)

Phanochilus Banks, 1944. Zoologica (New York), XXIX, p. 108, (Nov. 22, 1944). [Three species.]

TYPE: *Agenia nobilitata* Smith, 1864 [= *Phanochilus nobilitatum* (Smith)]. (Original designation.)

Pholidaporus Bradley, 1944. Trans. Amer. Ent. Soc., LXX, p. 136, (July 31, 1944).

TYPE: *Planiceps perpictus* Fox, 1897 [= *Euplaniceps* (*Pholidaporus*) *perpictus* (Fox)]. (Original designation and monobasic.)

Phyllosphex Brues, 1943. Ann. Ent. Soc. Amer., XXXVI, p. 311.

Lapsus calami for *Psyllosphex* Arnold, 1935, *q.v.*

Pilpomus A. Costa, 1859.[122] Fauna Regno Napoli, Imenotteri Aculeati, Pompilidea, p. 3, (Feb. 3, 1859); [no species]. Kohl, Verh. k. k. Zool.-Bot. Ges. Wien, XXXIV, p. 42, (1884); [numerous species].

TYPE: *Agenia carbonaria* Scopoli [i.e. *Sphex carbonaria* Scopoli, 1763 = *Pseudagenia carbonaria* (Scopoli) = *Pilpomus carbonarius* (Scopoli) = *Auplopus carbonarius* (Scopoli)]. (Fixed by Kohl, 1884, Verh. k. k. Zool.-Bot. Ges. Wien, p. 42.)

Isogenotypic with *Pseudagenia* Kohl, 1884, *q.v.* V. et. *Auplopus* Spinola, 1841.

Plagioceps Haupt, 1930. Mitt. Zool. Mus. Berlin, XVI, Heft 5, pp. 762, 777, (Dec. 15, 1930).

TYPE: *Aporus pumilus* A. Costa, 1882 [= *Plagioceps pumilus* (A. Costa) = *Microphadnus pumilus* (A. Costa)[123]]. (Original designation.)

Plagomma Haupt, 1941. Ann. & Mag. Nat. Hist., (11), VII, p. 79, (Jan. 24, 1941).

TYPE: *Plagomma rufifemur* Haupt, 1941. (Original designation.)

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[119] Cf. *Brethesia* Schrottky, *Cirripepsis* Banks, *Dinopepsis* Banks, *Giganteopepsis* Lucas, *Nannopepsis* Banks, *Stenopepsis* Banks, *Trichopepsis* Banks.

[120] *Cf.* Malaise, 1937, Ent. News, XLVIII, p. 132.

[121] Banks later redescribed *Phanagenia* as new (Jan. 1934, Proc. Amer. Acad. Art. & Sci., LXIX, p. 78) and states that the type is *P*[*ompilus* (*Agenia*)] *bombycina* Cresson, 1867.

[122] *Cf.* discussion of this name in appendix under *Auplopus* Spinola.

[123] *Teste* Arnold, 1937, Ann. Transvaal Mus., XIX, pp. 67–68.

Planiceps Latreille, 1825.[124] Familles naturelles du Règne Animal, p. 467, (1825).

TYPE: *Pompilus planiceps* Latreille, 1809 [= *Planiceps planiceps* (Latreille)]. (By absolute tautonymy and monotypy.)

Platyderes Guérin-Méneville, 1844 not of Stephens, 1827. Iconogr. Règne Animal, VII, Insect., p. 435. [Two species.]

TYPE: *Planiceps* (*Platyderes*) *erythrocephalus* Guérin, 1844 [= *Platyderes erythrocephalus* (Guérin) = *Ferreola erythrocephala* (Guérin)[125]]. (Present designation.)

Platydialepis Haupt, 1941. Ann. & Mag. Nat. Hist., (11), VII, p. 56, (Jan. 24, 1941). [Three species.]

TYPE: *Salius junctellus* Cameron, 1902 [= *Platydialepis junctella* (Cameron)]. (Original designation.)

Plectraporus Bradley, 1944.[126] Trans. Amer. Ent. Soc., LXX, p. 97, (July 31, 1944).

TYPE: *Planiceps hirsutus* Banks, 1917 [= *Aporus* (*Plectraporus*) *hirsutus* (Banks) = *Actenopoda* (*Plectraporus*) *hirsuta* (Banks)]. (Original designation.)

Poecilagenia Haupt, 1927.[127] Deutsch. Ent. Zeitschr., 1926, Beiheft, pp. 127, 130, (Feb. 20, 1927).

TYPE: *Calicurgus rubricans* Lepeletier, 1845 [= *Poecilagenia rubricans* (Lepeletier)]. (Original designation and monobasic.)

Poecilocurgus Haupt, 1937. Zeitschr. f. Naturwissensch. (Halle), XCI, pp. 127, 134.

TYPE: *Poecilocurgus fascipennis* Haupt, 1937. (Original designation and monobasic.)

Poecilopompilus Ashmead, 1902. Canad. Entom., XXXIV, p. 82, (April 5, 1902).

TYPE: *Pompilus navus* Cresson, 1867 [= *Poecilopompilus navus* (Cresson)]. (Original designation.)

Pogonius Dahlbom, 1845[128] not of Leach, 1815, not of Jarocki, 1822. Hymen. Europ., I, p. 453. [Four species.]

TYPE: *Sphex variegata* Linnaeus, 1758 [= *Pogonius variegatus* (L.) = *Dipogon* (*Dipogon*) *variegatus* (L.)]. (Present designation.)

Isogenotypic with *Agenia* Schiødte, 1837 not of Descourtilz, 1825, *Anoplius* Lepeletier, 1845 not of Brullé, 1834, and *Deuteragenia* Sustera, 1913, *q.v.* V. et.: *Dipogon* Fox, 1897.

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[124] *Cf.* discussion of *Planiceps* in appendix.

[125] *Cf.* Schulz, 1911, Zool. Anz., pp. 120–121. V. et. *Ferreola* Lepeletier.

[126] *Cf.* discussion of *Actenopoda* Ashmead, 1902 in appendix.

[127] According to Arnold (1935, Occ. Pap. Rhodesian Mus., no. 4, p. 30) *Meragenia* Banks, 1934, is a synonym of *Poecilagenia*.

[128] *Cf.* discussion of *Dipogon* Fox in appendix

Poimenus Arnold, 1937. Ann. Transvaal Mus., XIX, p. 1, (Nov. 8, 1937).
TYPE: *Schistonyx* (*Poimenus*) *Sheppardi* Arnold, 1937. (Monobasic.)

Pompilinus Ashmead, 1902. Canad. Entom., XXXIV, p. 85, (April 5, 1902).
TYPE: *Pompilus cylindricus* Cresson, 1867 [= *Pompilinus cylindricus* (Cresson)]. (Original designation.)

Pompiliodes Ashmead, 1902 not of Hampson, 1898. Canad. Entom., XXXIV, p. 84, (April 5, 1902).
Lapsus calami for, and isogenotypic with, *Pompilioïdes* Radoszkowski, 1887, *q.v.*

Pompilioïdes Radoszkowski, 1887.[129] Hor. Soc. Ent. Ross., XXI, p. 94, (June 10, 1887). [Two species.]
TYPE: *Pompilioïdes unicolor* Radoszkowski, 1887. (By designation of Ashmead, 1902, Canad. Entom., XXXIV, p. 84.)
Isogenotypic with *Pompiliodes* Ashmead, 1902 not of Hampson, 1898 and *Pompiloïdes* Dalla Torre, 1897, *q.v.*

Pompilius Spinola, 1808. Insect. Ligur., II, p. 37.
Lapsus calami for, and isogenotypic with, *Pompilus* Fabricius, 1798, *q.v.*

Pompilogastra Ashmead, 1902. Canad. Entom., XXXIV, p. 81, (April 5, 1902).
TYPE: *Pompilus aethiops* Cresson, 1865 [= *Pompilogastra aethiops* (Cresson) = *Lophopompilus aethiops* (Cresson)]. (Original designation.)

Pompiloïdes Dalla Torre, 1897. Catal. Hymen., VIII, p. 268.
Lapsus calami for *Pompilioïdes* Radoszkowski, 1887, *q.v.*

Pompilus Fabricius, 1798.[130] Suppl. Ent. Syst., pp. 212, 246–252. [Thirty-seven species.]
TYPE: *Pompilus viaticus* F. [i.e. *Sphex viatica* Linnaeus, 1758 = *Pompilus viaticus* (Linnaeus)]. (By designation of Latreille, 1810, Considérations générales . . . des Insectes, Tabl. Gen., p. 437.)

Priochilus Banks, 1944.[131] Psyche, L, p. 82, (March, 1944). [Numerous species.]
TYPE: *Pompilus nobilis* Fabricius [i.e. *Sphex nobilis* Fabricius, 1787 = *Priochilus nobile* (Fabricius)]. (Original designation.)

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[129] *Cf.* Bradley (1944, Eos, Rev. Españ. Ent., XX, pp. 93–95) for a discussion of *Pompilioïdes* Radoszkowski, 1887.

[130] This name is now referable to the Sphecidae where it will take precedence over *Podalonia* Spinola, 1851. Richards (1935, Trans. R. Ent. Soc. London, LXXXIII, p. 165) has seen the type of *Sphex viatica* Linnaeus, 1758 and found it to be a specimen of what is customarily known as *Podalonia hirsuta* (Scopoli, 1763). *V. et.* discussion of *Pompilus* Fabricius under *Psammochares* Latreille in appendix.

[131] Cf. *Argyrogenia* Bradley (Oct. 18, 1944).

Priocnemella Banks, 1925. Bull. Mus. Comp. Zoöl., Harvard Coll., lxvii, p. 337, (Nov. 1925). [Two species.]

Type: *Priocnemis* (*Priocnemella*) *fairchildi* Banks, 1925 [= *Priocnemella fairchildi* (Banks)]. (By present designation of Banks [*in litt.*].)

Priocnemioïdes Radoszkowski, 1888. Bull. Soc. Imp. Nat. Moscou, (N. S.), ii, p. 482. [Three species.]

Type: *Pompilus* (*Priocnemis*) *fulvicornis* Cresson, 1867 [= *Priocnemioïdes fulvicornis* (Cresson)]. (By designation of Banks, 1944, Zoologica, xxix, p. 102.)

Isogenotypic with *Priocnemoïdes* Ashmead, 1900, and *Prionocnemoïdes* Dalla Torre, 1897, *q.v.*

Priocnemis Schiødte, 1837.[132] Krøyer's Naturhistorisk Tidsskrift, (Kjøbenhavn), i, p. 324. [Seven species.]

Type: *Sphex exaltata* Fabricius, 1775 [= *Priocnemis* (*Priocnemis*) *exaltata* (F.)]. (By designation of Westwood, Jan. 1840, Introd. Mod. Class. Insect., ii, Gen. Synop., p. 82.)

Isogenotypic with *Priocnemus* Banks, 1917 not of Karsch, 1874, *Prionocnemis* W. F. Kirby, 1884, and *Prionocnemus* Burmeister, 1872, *q.v.* V. et. *Hemipogonius* Saussure, 1892.

Priocnemoïdes Ashmead, 1900. Canad. Entom., xxxii, p. 187, (May 31, 1900).

Lapsus calami for *Priocnemioides* Saussure, i.e. Radoszkowski, 1888, *q.v.*

Priocnemus Banks, 1917 not of Karsch, 1874. Bull. Mus. Comp. Zoöl., Harvard Coll., lxi, p. 101, (May, 1917).

Lapsus calami for *Priocnemis* Schiødte, 1837, *q.v.*

Priocnessus Banks, 1925. Bull. Mus. Comp. Zoöl., Harvard Coll., lxvii, p. 337, (Nov. 1925). [Two species.]

Type: *Salius* (*Priocnemis*) *neotropicalis* Cameron, 1891 [= *Priocnemis* (*Priocnessus*) *neotropicalis* (Cameron) = *Priocnessus neotropicalis* (Cameron)]. (By elimination of Banks, 1941, Canad. Entom., lxxiii, pp. 119–120, in erecting *Cressochilus* for *Pompilus* (*Priocnemis*) *nuperus* Cresson, 1867.)

Prionocnemis W. F. Kirby, 1884. Zool. Rec., xx, Insect., Hymen., p. 131.

Emendation for, and isogenotypic with, *Priocnemis* Schiødte, 1837, *q.v.*

Prionocnemoïdes Dalla Torre, 1897. Catal. Hymen., viii, p. 211.

Emendation for, and isogenotypic with, *Priocnemioïdes* Radoszkowski, 1888, *q.v.*

Prionocnemus Burmeister, 1872. Stettin. Ent. Zeit., xxxiii, p. 235.

Emendation for, and isogenotypic with, *Priocnemis* Schiødte, 1837, *q.v.*

Priophanes Banks, 1944. Psyche, l, p. 82, (March, 1944). [Several species.]

Type: *Priocnemis facetus* Cresson, 1872 [*Priophanes facetus* (Cresson)]. (Original designation.)

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[132] Cf. *Clistoderes* Banks, 1934; *Hemipogonius* Saussure, 1892.

Rhabdaporus Bradley, 1944. Trans. Amer. Ent. Soc., LXX, p. 121, (July 31, 1944).

TYPE: *Rhabdaporus bellus* Bradley, 1944. (Original designation and monobasic.)

Rhidestus Gussakovskij, 1929. Rev. Russe Ent., XXIII, p. 5.

Emendation or *lapsus calami* for, and isogenotypic with, *Ridestus* Banks, 1912, *q.v.*

Ridestus Banks, 1912. Journ. New York Ent. Soc., XIX, p. 223, (Feb. 1912).

TYPE: *Psammochares transversalis* Banks, 1910 [= *Ridestus transversalis* (Banks)]. (Original designation and monobasic.)

Rhynchopompilus Arnold, 1934. Occ. Pap. Rhodesian Mus., no. 3, p. 7, (May 31, 1934).

TYPE: *Rhynchopompilus cursor* Arnold, 1934. (Original designation and monobasic.)

Salius Fabricius, 1805 not of Schrank, 1798. Systema Piezatorum, p. 124. [Three species.]

TYPE: *Sphex sexpunctata* Fabricius, 1794 [= *Salius sexpunctata* (F.) = *Cryptocheilus* (*Cryptocheilus*) *sexpunctatum* (F.)]. (By designation of [Guérin], Dict. Univ. Hist. Nat., XI, p. 316, 1849.)

Isogenotypic with *Adonta* Billberg, 1820, *q.v.*

Saphobethylus Kieffer, 1911. Ann. Soc. Sci. Bruxelles, XXXV, p. 216.

TYPE: *Saphobethylus pallidus* Kieffer, 1911 [= *Olixon testaceum* Cameron, 1887 [145]]. (Monobasic.)

Isogenotypic through synonymy with *Olixon* Cameron, 1887, *q.v.*

Schistonyx Saussure, 1887.[146] Societas Entomològica (Zurich), II, p. 3, (April, 1887). [Two species.]

TYPE: *Cyphononyx* (*Schistonyx*) *velutinus* Saussure, 1887 [= *Schistonyx* (*Schistonyx*) *velutinus* (Saussure) [147]]. (By designation of Haupt, 1929, Mitt. Zool. Mus. Berlin, XV, p. 122.)

Schistosalius Saussure, 1892. [In Grandidier], Hist. Nat. Madagascar, XX, Hymén., I, p. 313. [Six species.]

TYPE: *Salius Ellioti* Saussure, 1891 [= *Salius* (*Schistosalius*) *Ellioti* Saussure = *Paracyphononyx ellioti* (Saussure) [148]]. (By designation of Ashmead, 1902, Canad. Entom., XXXIV, p. 84.)

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[145] *Teste* Turner & Waterston, 1917, Ann. & Mag. Nat. Hist., (8), XX, pp. 107–108. *V. et.:* Reid, 1939, Proc. R. Ent. Soc. London, (B), VIII, pp. 95–102.

[146] Cf. *Poimenus* Arnold, 1937.

[147] *Teste* Arnold (1937, Ann. Transvaal Mus., XIX, p. 10) and Banks (1941, Proc. Acad. Nat. Sci. Philadelphia, XCII, p. 352). *V. et.:* Haupt, 1930, Mitt. Zool. Mus. Berlin, XVI, p. 718.

[148] *Teste* Haupt (1929, Mitt. Zool. Mus. Berlin, XV, (1), 163–170), Arnold (1936, Ann. Transvaal Mus., XVIII, p. 428), and Banks (1941, Proc. Acad. Nat. Sci. Philadelphia, XCII, p. 355).

Schizagenia Cameron, 1910.[149] Wissenschaftliche Ergebnisse der Schwedischen Zoologischen Expedition nach dem Kilimandjaro, dem Meru Umgebenden Massaisteppen Deutsch-Öst-Afrika, 1905–1906, unter Leitung von Prof. Dr. Ynge Sjøstedt. 8 Hymenoptera. 7 Fossores, p. 256.

TYPE: *Schizagenia carinigena* Cameron, 1910. (Monobasic.)

Schizanoplius Cameron, 1904.[150] Rec. Albany Mus., I, p. 125, (June 17, 1904).

TYPE: *Schizanoplius violaceipennis* Cameron, 1904. (Monobasic.)

Sericopompilus Ashmead, 1902. Canad. Entom., XXXIV, p. 82, (April 5, 1902).

TYPE: *Pompilus cinctipes* Cresson, 1867 [= *Pompilus sordidus* Smith, 1855 = *Ceropales apicalis* Say, 1837 = *Serico-pompilus apicalis* (Say)]. (Original designation.)

Sinotocyphus Babiy, 1941. Proc. U. S. Nat. Mus., XC, p. 543.

TYPE: *Sinotocyphus chinensis* Babiy, 1941. (Original designation and monobasic.)

Sophropompilus Ashmead, 1902. Canad. Entom., XXXIV, p. 84, (April 4, 1902).

TYPE: *Pompilus ingenuus* Cresson, 1867 [= *Sophropompilus ingenuus* (Cresson)]. (Original designation.)

Sphictonotus Bertkau, 1885. Bericht wissen. Leist. Gebiet. Ent., Jahr. 1884, p. 169.

TYPE: *Pompilus Gravesii* Haliday, 1837 [= *Sphictonotus gravesii* (Haliday) = *Sphictostethus gravesii* (Haliday)]. (Monobasic.)

Lapsus calami for, and isogenotypic with, *Sphictostethus* Kohl, 1884, *q.v.*

Sphictostethus Kohl, 1884. Verh. k. k. Zool. Bot. Ges., XXXIV, pp. 37, 47, (Aug. 1884).

TYPE: *Pompilus Gravesii* Haliday, 1837 [= *Sphictostethus gravesii* (Haliday)]. (Original designation and monobasic.)

Isogenotypic with *Sphictonotus* Bertkau, 1885, *q.v.*

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[149] Arnold (1934, Ann. Transvaal Mus., XV, p. 342) places *Schizagenia* Cameron as a synonym of *Pseudagenia* Kohl (i.e. *Auplopus* Spinola seu *Pilpomus* Costa) which he divides into five "Sections." I think that when a careful study of all the forms of the large and widely distributed *Auplopus* is made, it may be possible to retain Cameron's name for at least a subgenus.

[150] Arnold (1937, Ann. Transvaal Mus., XIX, p. 58) places *Schizanoplius violaceipennis* Cameron, 1904 as a synonym of the Malagasy *Pompilus lutarius* Saussure, 1891 which he places in *Psammochares* and considers to be merely a race of the Arabian *Pompilus rutilus* Klug, 1834. But Banks (1941, Proc. Acad. Nat. Sci. Philadelphia, XCII, p. 360) disagrees with this view: he considers the South African *violaceipennis* to be distinct from the Malagasy *lutarius*, and furthermore treats *Schizanoplius* as a discrete genus.

Spilopompilus Ashmead, 1902. Canad. Entom., XXXIV, p. 81, (April 5, 1902).

TYPE: "*Pompilus biguttulatus* Fabr." [151] [i.e. *Pompilus biguttatus* Fabricius, 1798 = *Spilopompilus biguttatus* (Fabricius) = *Episyron biguttatus* (Fabricius)]. (Original designation.)

Spuridiophorus Arnold, 1934. Occ. Pap. Rhodesian Mus., no. 3, p. 2, (May 31, 1934).

TYPE: *Agenia capensis* Brauns, 1906 [= *Spuridiophorus capensis* (Brauns)]. (Original designation.)

Stenagenia Saussure, 1892. [in Grandidier], Hist. Nat. Madagascar, XX, Hymén., I, pp. 307, 338. [Two species.]

TYPE: *Stenagenia pedunculata* Saussure, 1892 [= *Agenia taeniata* Saussure, 1892 [152] = *Pseudagenia taeniata* (Saussure) [153] = *Auplopus taeniatus* (Saussure)]. (Present designation.)

Stenoclavelia Arnold, 1932. Ann. Transvaal Mus., XV, p. 44, (Oct. 1, 1932).

TYPE: *Stenoclavelia mirabilis* Arnold, 1932 [= *Cryptocheilus mirabile* (Arnold) [154]]. (Original designation and monobasic.)

Stenopepsis Banks, 1945. Bol. Entom. Venezol. (Caracas), IV, p. 82, (June 30, 1945). [Several species.]

TYPE: *Pepsis hymenaea* Mocsary, 1885 [= *Pepsis* (*Stenopepsis*) *hymenaea* Mocsary]. (Original designation.)

Syntomoclitus Arnold, 1937. Ann. Transvaal Mus., XIX, p. 25, (Nov. 8, 1937).

TYPE: *Syntomoclitus bicolor* Arnold, 1937. (Original designation and monobasic.)

Tachyagetes Haupt, 1930.[155] Mitt. Zool. Mus. Berlin, XVI, Heft 2, p. 235, (June 30, 1930, [two species]); Heft 5, p. 690, (Dec. 15, 1930, [fifteen species]).

TYPE: *Evagetes filicornis* Tournier, 1889 [= *Tachyagetes filicornis* (Tournier) (? = *Aporus bicolor* Spinola, 1808)]. (Original designation.)

Tachypompilus Ashmead, 1902.[156] Canad. Entom., XXXIV, p. 83, (April 5 1902).

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[151] Fabricius never described a "*Pompilus biguttulatus*": this is generally presumed to be a *lapsus calami* for *Pompilus biguttatus* F., 1798.

[152] *Cf.* Schulz, 1911, Zool. Ann. IV, p. 127.

[153] *Cf.* Banks, 1941, Proc Acad. Nat. Sci. Philadelphia, XCII, p. 350. V. et.: discussion of *Auplopus* Spinola in appendix.

[154] *Teste* Arnold, 1934, Ann. Transvaal Mus., XV, p. 399.

[155] *Cf.* discussion of *Tachyagetes* Haupt, 1930 under *Aporus* Spinola, 1808 in appendix.

[156] Banks (1934, Proc. Amer. Acad. Arts and Sci., LXIX, p. 86) states with regard to *Tachypompilus*, that ". . . this genus was used by Ashmead for the undescribed species *abbotti*; it was validated by Brown (Philip. J. Sci., I, p.

TYPE: *Tachypompilus Abbotti* Ashmead, 1902 [= *Sphex analis* Fabricius, 1781 = *Tachypompilus analis* (F.)]. (Original designation.)

Isogenotypic through synonymy with *Balanoderes* Haupt, 1929, *q.v.*

Taeniaporus Haupt, 1930. Mitt. Zool. Mus. Berlin, XVI, pp. 762, 774, (Dec. 15, 1930).

TYPE: *Pompilus (Evagetes) orichalceus* Saunders, 1901 [= *Taeniaporus orichalceus* (Saunders)]. (Original designation and monobasic.)

Tagalochares Bank, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, pp. 84, 97, (Jan. 1934).

TYPE: *Tagalochares plutonis* Banks, 1934. (Monobasic.)

Tea new subgenus for *Paraferreola* Auctt. not of Sustera, 1913.[157]

TYPE: *Sphex rhombica* Christ, 1791 [= *Eoferreola (Tea) rhombica* (Christ)].

Teinotrachelus Arnold, 1935. Ann. Transvaal Mus., XV, p. 427, (April 9, 1935). [Three species.]

TYPE: *Parapompilus longicollis* Bischoff, 1913 [= *Teinotrachelus longicollis* (Bischoff)]. (Original designation.)

Teleostegus Banks, 1933. Psyche, XL, p. 3, (July 11, 1933).

Lapsus calami for *Telostegus* A. Costa, 1887, *q.v.*

Telostegus A. Costa, 1887. Prospetto degli Imenotteri Italiani . . ., II, p. 89.

TYPE: *Aporus major* A. Costa, 1881 [= *Aporus (Telostegus) major* Costa = *Telostegus majus* (Costa)]. (Monobasic.)

Telostholus Haupt, 1929. Mitt. Zool. Mus. Berlin, XV, heft 1, p. 185, (April, 1929). [Two species.]

TYPE: *Planiceps orientalis* Cameron, 1891 [= *Telostholus orientalis* (Cameron)]. (Original designation.)

Tenthredinites Meunier, 1915. Verh. k. Akad. Wetensch., Amsterdam, (2), XVIII, (5), p. 11. [Fossil.]

TYPE: *Tenthredinites bifasciata* Meunier, 1915 [= *Pompilus bifasciatus* (Meunier)[158] = *Psammochares bifasciatus* (Meunier)]. (Monobasic.)

684, 1906) for his new species *T. ashmeadi*. *Balanoderes* Haupt is, I suppose, to be considered a synonym, but when he described it he says genotype is *P. apicalis* F., but it was evidently intended for *P. analis* F." [which Haupt (1930, Mitt. Zool. Mus. Berlin, XV, (3/4), p. 606) admits]. Banks states further that "*Tachypompilus ashmeadi* Brown . . . is scarcely distinct from *T. analis* Fabr., but if this widely distributed species is ever split into subspecies *ashmeadi* can be used for the Philippine form." I disagree with Banks' view that *Tachypompilus* was not validated until 1906 when Brown described *T. ashmeadi*. The characters given by Ashmead in his original proposal of the genus are sufficient to also characterize *T. abbotti* Ashmead, 1902. *V. et.*: remarks under *Balanoderes* Haupt, 1929.

[157] *Cf.* remarks under *Paraferreola* Sustera, 1913.

[158] *Teste* Theobald, 1937, Insect. fossil. oligoc. France, p. 130, pl. I, p. 15.

Tetracryptocheilus Zavattari, 1907. Boll. Mus. Zool. Comp. Anat. R. Univ. Torino, XXII, no. 555, p. 4, (April 20, 1907). [Two species.]

TYPE: *Cryptocheilus* (*Tetracryptocheilus*) *Ascensi* [159] Zavattari, 1907 [= *Hemipepsis* (*Tetraodontonyx*) *Ascensi* (Zavattari) [160]]. (Original designation.)

Tetracryptochilus ' Schulz, 1911. Zool. Ann., IV, p. 112.

Emendation for, and isogenotypic with, *Tetracryptocheilus* Zavattari, 1907, *q.v.*

Tetraodontonyx Ashmead, 1900.[161] Canad. Entom., XXXII, p. 187, (May 31, 1900).

TYPE: *Tetraodontonyx rufipes* Ashmead, 1900 [= *Pompilus heros* Guérin, 1848 = *Hemipepsis* (*Tetraodontonyx*) *heros* (Guérin) [162]]. (Original designation.)

Tomonotulus Arnold, 1936. Ann. Transvaal Mus., XVIII, pp. 74, 85, (Feb. 7, 1936).

TYPE: *Idopompilus* (*Tomonotulus*) *quadrifasciatus* Arnold, 1936 [= *Eidopompilus* (*Tomonotulus*) *quadrifasciatus* (Arnold)]. (Monobasic.)

Trachyglyptus Arnold, 1934. Ann. Transvaal Mus., XV, pp. 290, 377, (Aug. 1, 1934).

TYPE: *Cryptosalius spinosipes* Turner, 1927 [= *Trachyglyptus spinosipes* (Turner)]. (Original designation and monobasic.)

Trichocurgus Haupt, 1937. Zeitschr. f. Naturwissen. (Halle), XCI, pp. 127, 134, (1937). [Two species.]

TYPE: *Pompilus monachus* Smith, 1855 [= *Trichocurgus monachus* (Smith)]. (Original designation.)

Trichonyx Haupt, 1929. Rev. Zool. Bot. Afric., XVII, p. 195, (Sept. 15, 1929).

TYPE: *Hemipepsis unguicularis* Kohl, 1913 [= *Trichonyx unguicularis* (Kohl) = *Hemipepsis* (*Hemipepsis*) *unguicularis* Kohl [163]]. (Original designation.)

Trichopepsis Banks, 1945. Bol. Entom. Venezol. (Caracas), IV, p. 82, (June 30, 1945). [Several species.]

TYPE: *Pepsis limbata* Guérin, 1838 [= *Pepsis* (*Trichopepsis*) *limbata* Guérin]. (Original designation.)

Trichosalius Arnold, 1934.[164] Ann. Transvaal Mus., XV, p. 390, (Aug. 1, 1934). [Four species.]

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[159] Authors usually give *Ascensoi* as the spelling of this species but Zavattari proposed it as *Ascensi*.

[160] *Teste* Arnold, 1932, Ann. Transvaal Mus., XIV, pp. 367, 396.

[161] Cf. *Tetracryptocheilus* Zavattari, 1907.

[162] *Teste* Arnold, 1932, Ann. Transvaal Mus., XIV, pp. 365, 396.

[163] *Teste* Arnold, 1932, Ann. Transvaal Mus., XIV, p. 396.

[164] Cf. *Paratrichosalius* Arnold, 1934.

TYPE: *Trichosalius nitidiventris* Arnold, 1934 [= *Trichosalius* (*Trichosalius*) *nitidiventris* Arnold]. (Original designation.)

Trichosyron Haupt, 1930. Mitt. Zool. Mus. Berlin, XVI, (2), p. 233, (June 30, 1930).
TYPE: *Trichosyron reinigi* Haupt, 1930. (Original designation and monobasic.)

Tumagenia Banks, 1934. Proc. Amer. Acad. Arts & Sci., LXIX, pp. 39, 67, (Jan. 1934).
TYPE: *Tumagenia iris* Banks, 1934. (Monobasic.)

Turneromyia Banks, 1941. Occ. Pap. Bernice P. Bishop Mus., (Honolulu), XVI, no. 10, pp. 242, 243, (Sept. 2, 1941).
TYPE: *Psammochares ahrimanes* Turner [i.e. *Anoplius ahrimanes* Turner, 1910 = *Turneromyia ahrimanes* (Turner)]. (Original designation and monobasic.)

Wesmaelinius A. Costa, 1886. Fauna Regno Napoli, Imenotteri, Sphecid., Pompilidea, p. 46, (June 30, 1886).[165]
TYPE: *Sphex sanguinolenta* Fabricius, 1793 [= *Wesmaelinius sanguinolentus* (F.) = *Homonotus* (*Homonotus*) *sanguinolentus* (F.)]. (Monobasic.)
Isogenotypic with *Isonotus* Dahlbom, 1842 not of Lepeletier & Serville, 1828 not of Perty, 1833 and *Homonotus* Dahlbom, 1844, *q.v.*

Wesmaelinus Dalla Torre, 1897. Catal. Hymen., VIII, p. 269.
Typographical error or *lapsus calami* for *Wesmaelinius* A. Costa, 1886, *q.v.*

Xanthampulex Schulz, 1906.[166] Spolia Hymenopterologica, p. 183.
TYPE: *Xanthampulex trifur* Schulz, 1906. (Monobasic.)

Xenaporus Ashmead, 1902.[167] Canad. Entom., XXXIV, p. 88, (April 5, 1902).
TYPE: *Pompilus amoenus* Klug, 1834 [= *Xenaporus amoenus* (Klug)]. (Original designation.)

Xenocurgus Haupt, 1937. Zeitschr. f. Naturwissen. (Halle), XCI, pp. 128, 135. [Two species.]
TYPE: *Xenocurgus tasmanicus* Haupt, 1937. (Original designation.)

Xenopepsis Arnold, 1932. Ann. Transvaal Mus., XIV, pp. 291, 323, 367, (July 6, 1932).
TYPE: *Hemipepsis* (*Xenopepsis*) *commixta* Arnold, 1932 [= *Xenopepsis commixta* (Arnold)[168]]. (Original designation and monobasic.)

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[165] *V. et.*: Prospetto degli Imenotteri Italiani, II, p. 46, (1887).

[166] *Cf.* Turner, 1912, Ann. & Mag. Nat. Hist., (8), X, p. 361. *V. et.*: Banks, 1934, Proc. Amer. Acad. Arts & Sci., LXIX, pp. 114–117.

[167] *Cf.* Haupt, 1930, Mitt. Zool. Mus. Berlin, XVI, pp. 770, 775.

[168] *Teste* Arnold, 1936, Ann. Transvaal Mus., XVIII, p. 110.

APPENDIX

In the foregoing list I have endeavored to give the accepted taxonomic position of the genotypic species. Generally I have presented in footnotes under each generic name my reasons for these allocations and the frequent resultant synonymy. But the nomenclatorial history and synonymy of certain names is rather involved and requires a fuller treatment than can be encompassed within a short footnote. Consequently I present on the following pages discussions of a number of these names.

ACTENOPODA Ashmead

Aporus Auctt. not of Spinola, 1808.
Actenopoda Ashmead, Canad. Entom., XXXIV, p. 88, (1902).
? *Melanaporus* Ashmead, Canad. Entom., XXXIV, p. 132, (1902).
Aporus (*Plectraporus*) Bradley, Trans. Amer. Ent. Soc., LXX, pp. 87, 88, 97, (1944).
Aporus (*Notoplaniceps*) Bradley, Trans. Amer. Ent. Soc., LXX, pp. 87, 88, 100, (1944).
Aporus (*Neoplaniceps*) Bradley, Trans. Amer. Ent. Soc., LXX, pp. 87, 88, 104, (1944).

Under the discussion of *Aporus* Spinola, 1808 on a following page, I have shown there is presumptive evidence that *Aporus bicolor* Spinola, 1808 and *A. unicolor* Spinola, 1808 may not be congeneric. The correct type of *Aporus* Spinola, 1808 is *Aporus bicolor* Spinola, 1808 which Haupt has indicated may be conspecific with *Evagetes filicornis* Tournier, 1889, the type of *Tachyagetes* Haupt, 1930. If this synonymy proves to be correct, *Tachyagetes* Haupt, 1930 falls as an absolute synonym of *Aporus* Spinola, 1808, since they both have in effect the same species as type.

For half a century or more, authors have accepted *Aporus unicolor* Spinola, 1808 as type of *Aporus*. However, as Haupt has demonstrated, *Aporus unicolor* Spinola may not be congeneric with *A. bicolor* Spinola, and if the name *Aporus* must eventually be applied to what at present is known as *Tachyagètes* Haupt, then another name must be found for *Aporus* Auctt. not of Spinola, 1808.

At my request, Dr. Henry K. Townes of the Bureau of Entomology and Plant Quarantine very kindly examined the type of

Actenopoda Rileyi Ashmead, the type of *Actenopoda* Ashmead, 1902, in the collection of the United States National Museum and reported as follows: "*Actenopoda rileyi* Ash. seems to be the same as *Aporus niger* Cr. [=*Planiceps niger* Cresson, 1867]. I have taken out the genitalia of the type of *A. rileyi* (a ♂ labeled "Mo.") and compared them with those of the specimens of *niger* det. Bradley." In his recent review of the New World Pompilinae,[169] Bradley follows recent custom by accepting *unicolor* as type of *Aporus* and places *Planiceps niger* Cresson in the nominate subgenus of *Aporus* [Auctt.]. Thus if the name *Aporus* is shifted to, and substituted for, *Tachyagetes* Haupt, Ashmead's name *Actenopoda* may be used for *Aporus* Auctt. not of Spinola, 1808. Furthermore, since *Aporus* Auctt. is the type of a tribe, the name Actenopodini should be substituted for Aporini.

APORINUS Ashmead

Aporinus Ashmead, Canad. Entom., XXXIV, p. 88, (1902).

Ever since Ashmead proposed *Aporinus* in 1902, this generic name has been a ghost, disembodied, flitting unhappily about unable to find any suitable resting place. Ashmead stated that the fore wing of *Aporinus* has only one submarginal cell, a characteristic which no Aporine apparently possesses. Although Ashmead designated no type, nevertheless he declared that *Aporinus* was equivalent to Kohl's seventeenth group of *Pompilus*.[170] A study of Kohl's paper on the genera of Pompilidae reveals that not only has Ashmead misinterpreted Kohl, but also that Kohl's paper has a number of typographical errors, some of which have been indicated by Haupt.[171] Kohl did not, either in 1884 or later, designate a type for his "17. Gruppe" of *Pompilus*: he merely stated that it and the "16. Gruppe" combined contained twenty-four species and were the equivalent of *Ferreola* Smith [1855]. Smith in 1855 included a miscellaneous assortment of species under *Ferreola*;[172] some of these (*dimidiata* Fabricius, *bicolor* Smith) are now referable to *Ferreola* (*olim Platyderes*), others (*distincta* Smith and *fasciata* Smith) to *Eoferreola* (*olim Paraferreola* Auctt.), still others (*unicolor* Smith and *sanguinea* Smith) to *Psorthaspis*, and one (*humboldti*) to *Pseudopompilus*. Therefore to quell once and for all a name which might be a source of future trouble and confusion, I designate *Sphex dimidiata* Fabricius, 1793 [=*Aporinus dimidiatus* (F.) =*Ferreola dimidiata* (F.)] type of *Aporinus* Ashmead, 1902 and thus cause it to fall as a synonym of *Ferreola* Lepeletier, 1845.

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[169] Trans. Amer. Ent. Soc., LXX, pp. 23–157, (1944).

[170] Kohl: Verh. k. k. Zool. Bot. Ges. Wien, XXXIV, p. 55, (1884).

[171] Haupt: Mitt. Zool. Mus. Berlin, XVI, p. 681, (1930).

[172] Smith: Cat. Hymen. Insect. Brit. Mus., III, pp. 167–170, (1855).

APORUS Spinola

Aporus Spinola, Insect. Ligur., II, ii, p. 5, (1808).
Tachyagetes Haupt, Mitt. Zool. Mus. Berlin, XVI, Heft 2, p. 235, (June 15–30, 1930); Heft 5, pp. 690–703, (Dec. 15, 1930).

Spinola erected *Aporus* in 1808 for the reception of two new species: *A. bicolor* [♀] and *A. unicolor* [♂], and in 1810 Latreille chose *bicolor* as the type of *Aporus*. For nearly a century, Hymenopterists have generally regarded *unicolor* and *bicolor* to be merely opposite sexes of the same species, and for at least the past fifty years various authors have cited *unicolor* as type of the genus. So far as I have been able to determine, the first to definitely postulate the theory that *unicolor* is the male of *bicolor* was Wesmael[173] who in 1852 adopted the name *bicolor* for the species, and, under the rule of the first reviser (Art. 28), *bicolor* Spinola is the correct name which must be applied to the species if it is ever definitely proven that *unicolor* and *bicolor* are merely opposite sexes of the same species.

In 1930, Haupt[174] discussed in some detail the identity of *Aporus bicolor* which Spinola stated was based upon a female. Haupt discovered in the Berlin Zoological Museum what apparently may be a cotype of *Aporus bicolor* along with specimens of *A. unicolor* which Spinola sent to Klug. The specimens of *Aporus unicolor* Spinola agree with the modern interpretation of the species, but the specimen labelled *Aporus bicolor* by Spinola is a male, and, according to Haupt, is conspecific with *Evagetes filicornis* Tournier, 1889 upon which Haupt based his genus *Tachyagetes.* Haupt states that he has not seen the type of *Aporus bicolor* Spinola, 1808 and that the exact identity of this species is entirely dependent upon the discovery and study of Spinola's holotype, if it is still in existence. But on the basis of the data presented by Haupt, I do not believe we may continue to consider *Aporus bicolor* Spinola and *A. unicolor* Spinola merely opposite sexes of the same species. Moreover, until it can be definitely proven otherwise, it might be well to record *Tachyagetes* Haupt, 1930 as an absolute synonym of *Aporus* Spinola, 1808 (not of Auctt.) since they both in effect have the same species as type. This switch of the generic name *Aporus* Spinola, 1808 will leave *Aporus* Auctt. not of Spinola apparently without a name, but a discussion of the situation is presented on another page under *Actenopoda* Ashmead.

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[173] Wesmael, Bull. Acad. R. Sci. Belg., XVIII, p. 473, (1852).

[174] Haupt, Mitt. Zool. Mus. Berlin, XVI, pp. 683, 699, 730–732, (1930).

Haupt first published the generic name *Tachyagetes* in June 15–30, 1930[175] in the following manner: "*Tachyagetes egens* n. g. et n. sp." Thus according to Opinion 30, it might be necessary to accept the Pamir *T. egens* as type. However, at the beginning of his treatment of *T. egens*, Haupt remarks ". . . Die neue Gattung *Tachyagetes*, die ich in meiner Bearbeitung der "Psammocharidae mit nur 2 Cubitalzellen" ausführlich mitt allen mir bekannt gewordenen Arten behandeln werde, gründete ich auf *T. filicornis* Tournier (olim *Evagetes*) . . ." Haupt's formal characterization of *Tachyagetes* in which he included fifteen species (among which were *T. filicornis* (Tournier) [=*Evagetes filicornis* Tournier, 1889] and *T. egens* Haupt, 1930) did not appear in print until the middle of December, 1930.[176] However, inasmuch as Haupt stated in June, 1930 that he based *Tachyagetes* on *T. filicornis* (Tournier), and in December, 1930 also definitely designated *filicornis* the type, I believe that this species rather than *egens* must be considered the genotype of *Tachyagetes*.

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[175] Mitt. Zool. Mus. Berlin, XVI, Heft 2, p. 235, (June 15–30, 1930).

[176] Mitt. Zool. Mus. Berlin, XVI, Heft 5, pp. 690–703, (Dec. 15, 1930).

AUPLOPUS Spinola

Auplopus Spinola, Ann. Soc. Ent. France, x, p. 108, (1841).

Aoplopus Agassiz, Nomen. Zool. Index Univ., pp. 27, 41, (1846).

Pilpomus A. Costa, Fauna Regno Napoli, Imenotteri Aculeati, Sphecid. Pompilidea, p. 3, (Feb. 3, 1859): [no species].—Kohl, Verh. k. k. Zool.-Bot. Ges. Wien, XXXIV, p. 42, (Jan. 2, 1884): [many species].

Pseudagenia Kohl, Verh. k. k. Zool.-Bot. Ges. Wien, XXXIV, pp. 38, 42, (Jan. 2, 1884).

Stenagenia Saussure, [in Grandidier] Hist. Nat. Madagascar, xx, Hymen., I, pp. 307, 338, (1892).

Schizagenia Cameron, Wissen. Ergebn. Schwed. Zool Exp. Kilimandjaro, Meru . . . 8. Hymen 7 Fossores, p. 256, (1910).

The name *Pseudagenia*, under which the species of this genus have hitherto been known, can no longer be applied to this genus. For in 1884, when Kohl described *Pseudagenia*, he listed *Pilpomus* A. Costa, 1859 as an exact equivalent of it. Costa proposed *Pilpomus* in a key to the genera of Pompilidae, but as far as I can determine, never definitely associated species with it. But Kohl, in recording *Pilpomus* Costa as an exact synonym of his new genus *Pseudagenia*, thereby included in it all the species referable to *Pseudagenia*, and furthermore, in designating *Agenia carbonaria* Scop. [=*Sphex carbonaria* Scopoli, 1763] as type of *Pseudagenia*, likewise fixed *carbonaria* as the type of *Pilpomus* A. Costa, 1859.[176a] Thus since Costa proposed *Pilpomus* twenty-three years prior to *Pseudagenia* Kohl, Costa's name *Pilpomus* takes precedence over Kohl's much later *Pseudagenia*.

In 1841, Spinola proposed *Auplopus*[177] for an unnamed variety of *Pompilus femoratus* Fabricius, 1805, from Cayenne. The name *Auplopus* has long been a mystery, due chiefly to the uncertainty surrounding the identity of *Pompilus femoratus* Fabricius, 1805 and *Pompilus femoratus* var. ♀, Spinola, 1841. Recently I have had an opportunity of studying part of the material which Banks in 1944 recorded as *Pseudagenia femorata* (F.)[178]

[176a] In view of the dictum expressed in Opinion 10, some may not consider Kohl's designation valid. Therefore, I hereby designate *Sphex carbonaria* Scopoli, 1763 type of *Pilpomus* A. Costa, 1859.

[177] In 1846 Agassiz emended *Auplopus* to *Aoplopus*.

[178] Zoologica, XXIX, p. 109, (1944).

from various localities in British Guiana and find it agrees quite well with Spinola's description of his Cayenne specimens. These Guianan specimens are congeneric with specimens determined by Kohl as *Pseudagenia carbonaria* (Scop.), and I believe therefore that *Auplopus* Spinola, 1841 should be substituted for *Pseudagenia* Kohl, 1884. However, Mr. Banks has very kindly expressed the opinion (*in litt.*) that he considers *Auplopus* a *nomen nudum* because it is based on an unnamed variety of *Pompilus femoratus* F. Moreover, he believes that this "var. ♀" of Spinola is a different species from that which he and Fox regard as *Pompilus femoratus* F.; and furthermore, that *femoratus* F. belongs to a different section of *Pseudagenia* than does *carbonaria* Scop., so that very possibly *Auplopus* and *Pseudagenia* (or *Pilpomus*) will eventually prove to be different genera. I have the greatest confidence in Mr. Banks' opinion and judgment and gladly defer to him on all these points except that I cannot consider *Auplopus* a *nomen nudum.* I believe that Spinola's name *Auplopus* should be used for this genus as presently understood. But when it is shown that the South American forms exemplified by *Pompilus femoratus* var. ♀ Spinola, 1841 are generically distinct from the European and other species typified by *Sphex carbonaria* Scopoli, 1763, then *Auplopus* Spinola, 1841 may be used for the first group and *Pilpomus* A. Costa, 1859 must be applied to the second genus. However, until such time as this fact may be demonstrated, I recommend that Spinola's name *Auplopus* be used for the whole complex.

Stenagenia Saussure, 1892 and *Schizagenia* Cameron, 1910 may, at our present state of knowledge, be considered synonyms of *Auplopus.* But in the event that the genus is divided into genera or subgenera, these names are available and may be applied to some of the segregated groups.

Bradley has recently shown that the name Pseudageniini must replace Haupt's term Macromerinae.[179] With the adoption of *Auplopus* (or *Pilpomus*) for this genus, the tribal name must be changed to Auplopodini (or Pilpomini).

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[179] Notulae Naturae, Acad. Nat. Sci. Philadelphia, no. 145, p. 3, (1944).

DIPOGON Fox

Agenia Schiødte, Krøyer's Naturhist. Tidsskr., I, p. 321 ,(1837). [Not of Descourtilz, 1825.]

Pogonius Dahlbom, Hymen. Europ., I, p. 453, (1845). [Not of Leach, 1815 not of Jarocki, 1822.]

Anoplius Lepeletier, [Roret's Suite á Buffon], Hist. Nat. Insect., Hymén., III, p. 440, (1845). [Not of Dufour, 1834.]

Dipogon Fox, Proc. Acad. Nat. Sci. Phila., 1897, p. 241, (1897).

Deuteragenia Sustera, Verh. k. k. Zool.-Bot. Ges. Wien, LXII, p. 191, (1913).

Agriogenia Banks, Canad. Entom., LI, p. 83, (1919).

Dipogon (*Adipogon*) Banks, Bull. Mus. Comp. Zoöl., XCIV, p. 181, (1944).

This genus was generally known as *Agenia* until Sustera called attention in 1913 that *Agenia* Schiødte, 1837 was a homonym and rechristened it *Deuteragenia.* Sustera's name has been used for nearly three decades, but recently Banks has found that the Brazilian *Dipogon populator* Fox, 1897 is congeneric with *Deuteragenia*, and, since the name of Fox has sixteen years priority over that of Sustera, has adopted *Dipogon* as the correct name for the genus. Furthermore, Banks has recently recorded *Pompilus brevis* Cresson, 1867, the type of *Agriogenia* Banks, 1919, as *Dipogon brevis* and confirmed in correspondence that *Agriogenia* is a synonym of *Dipogon.* In 1944, Banks established *Adipogon* as a subgenus of *Dipogon.*

Agenia Schiødte, 1837, not of Descourtilz, 1825; *Pogonius* Dahlbom, 1845, not of Leach, 1815, not of Jarocki, 1822; *Anoplius* Lepeletier, 1845, not of Dufour, 1834; and *Deuteragenia* Sustera, 1913 are all isogenotypic with the same species—*Sphex variegata* Linnaeus, 1758—as type. *Dipogon* Fox, 1897 and *Agriogenia* Banks, 1919 are congeneric with each other and also with the preceding four names.

HOMONOTUS Dahlbom

Isonotus Dahlbom, Dispos. meth. Scand. Hymen., I, p. 3, (1842). Not of Lepeletier & Serville, 1828 not of Perty, 1833.]

Homonotus Dahlbom, Hymen. Europ., I, p. 35, (1844); p. 441,.(1845).

Homotus F. Smith, Catal. Hymen. Insect. Brit. Mus., III, p. 168, (1855).

Wesmaelinius A. Costa, Fauna Regno Napoli, Imenotteri, Sphecid., Pompilidea, p. 46, (1886).—A. Costa, Prospetto Imenotteri Italiani . . . p. 46, (1887).

Hemisalius Saussure, [in Grandidier], Hist. Nat. Madagascar, XX, Hymen., I, p. 313, (1892).

Wesmaelinus Dalla Torre, Catal. Hymen., VIII, p. 269, (1897).
Homonotus (*Gilbertella*) Turner, Ann. & Mag. Nat. Hist., (8), XIX, p. 150, (1917). [Not of Waite, 1902 not of Eigenmann, 1903.]

Dahlbom first recognized this genus as a discrete entity in 1842, proposed *Isonotus* for it, and included under that name *Pompilus castaneus* Klug, 1834 and *Sphex sanguinolenta* Fabricius, 1793. In the first part of his "Hymenoptera Europaea," published in 1844, Dahlbom states under the generic name *Salius* that he has had to reject *Isonotus* because it is the name of a previously described Coleopterous genus. Under *Salius*, Dahlbom includes only one species, *Salius sanguinolentus* [=*Sphex sanguinolenta* F., 1793], and, at the conclusion of his description and discussion of this species, remarks, ". . . Si haec species, ut proprium Genus, a Saliis genuinis removenda esset, nomen *Homonotus* proposui."

In the third part of the "Hymenoptera Europaea," published in 1845, Dahlbom still retains, on p. 441, *S. sanguinolenta* F., in *Salius*. However, immediately following this genus, he gives a formal characterization of *Homonotus* in which he includes two species—*H. algiericus* and *H. fusciventris*—both of which are *nomina nuda*. It is this later reference which authors have generally accepted hitherto as the first proposal of the genus. But I believe that his earlier 1844 discussion of *Salius sanguinolentus* and the remark quoted above must be interpreted as the original proposal of the genus.

In 1886 and 1887, Achille Costa, probably unaware of Dahlbom's genus, proposed *Wesmaelinius* for *Sphex sanguinolenta* Fabricius, 1793, but inasmuch as it is founded on the same species as *Homonotus* Dahlbom, 1844, it falls as an absolute synonym of that name.

According to both Turner and Schulz, *Hemisalius* Saussure, 1892 is synonymous with typical *Homonotus*.

In 1917, Turner erected the subgenus *Gilbertella*, but this name is twice preoccupied and consequently I have renamed it *Gilbertellana* on a preceding page.

MARIMBA new genus

Cryptosalius Turner, Ann. & Mag. Nat. Hist., (9), i, pp. 354–356, (1918). [In part.]
Parapompilus Arnold, Ann. Transvaal Mus., xv, pp. 89, 104–106, (Oct. 1, 1932). [In part; not of Smith, 1855]
Cryptosalius Arnold, Ann. Transvaal Mus., xv, pp. 389–390, (Aug. 1, 1934) [In part, not of Turner.]

TYPE: *Cryptosalius contristans* Turner, 1918 [=*Marimba contristans* (Turner)].

In 1932, Arnold assigned the four East African species which Turner in 1918 described in *Cryptosalius* (*contristans*, *indocilis*, *perluctuosus*, and *elgonensis*) to *Parapompilus* with the observation that he could ". . . see no good reason for not sinking . . . *Cryptosalius* in the synonymy [of *Parapompilus*], although the *C*[*ryptosalius*] *spinosipes* of [Turner, 1927] cannot be included under *Parapompilus*."

In 1934, however, Arnold remarks, ". . . I have seen the types of Turner's species of *Cryptosalius* in the British Museum and now regard the genus as valid, but with the exclusion of *C. spinosipes* Turner, which, as stated on a previous page, is the type of the new Macromerine genus *Trachyglyptus*." Arnold states further that: ". . . *Pseudagenia rava* Bingham which Turner placed in this genus differs from the four African species [i.e. *contristans*, *indocilis*, *perluctuosus*, and *elgonensis*] in having the pronotum shorter and much more rounded in front, and in the shape of the epinotum, in which the dorsum and the declivity are not distinctly delimited, the two parts seen in profile forming a low and unbroken arc. Furthermore, the wings are not banded. The claws, however, are bifid as in *Cryptosalius*. The species should be placed in another genus." However, *Pseudagenia rava* Bingham is the type of *Cryptosalius* Turner, and it is necessary to have another name for these four African species. Consequently I propose here the name *Marimba* as a new genus for the reception of *Cryptosalius contristans* Turner, *C. indocilis* Turner, *C. perluctuosus* Turner, and *C. elgonensis* Turner. These differ from *Parapompilus* in the following respects:

The tarsal comb is absent and the tarsal segments are more slender. The pronotum is much longer, with the humeral angles subrectangular, not broadly rounded as in *Parapompilus*. The flagellar segments are more slender. The sculpture, particularly on the pronotum and mesonotum is much stronger, and the first abdominal segment is longer and more distinctly subpetiolate. The middle and hind tibiae are more feebly spinose on the upper surface, and the apical segments of the tarsi are only feebly spinose underneath. The wings are hyaline and bifasciate, with the second and third submarginal cells much shorter and not much longer on the cubitus than high. The general aspect, particularly of the abdomen, is more slender than that of *Parapompilus*.

PLANICEPS Latreille

Planiceps Latreille, Familles naturelles du Règne Animal, p. 467, (1825).
Planiceps Lepeletier et Serville, Encyclopédie Méthodique, x, p. 330, (1825).
Planiceps Berthold, Naturliche Familien des Thierreichs, p. 458, (1827).
Planiceps Van der Linden, Nouv. Memb. Acad. R. Sci., Bruxelles, IV, p. 354, (1827).
Planiceps Latreille, Dictionnaire classique d'Histoire Naturelle, XIV, p. 14, (1828).

The generic name *Planiceps* has a somewhat involved bibliographic history. So far as I can determine, it appears first in print twice during the year 1825: first, under Latreille's authorship in his "Familles naturelles du Règne Animal"; secondly, under Lepeletier and Serville's signature in the tenth volume of the "Encyclopédie Méthodique." Both Latreille and Lepeletier and Serville briefly characterized the genus, but neither makes definite mention of any included species. Lepeletier and Serville state that the type is a species from the south of France, and from inference it may be gathered that they have *Pompilus planiceps* Latreille, 1809 in mind. Latreille gives a bibliographic reference to his "Genera Crustaceorum et Insectorum" (vol. 4, p. 65, 1809). The problem then is to determine which characterization of *Planiceps* appeared first in print. Lepeletier and Serville credit *Planiceps* to Latreille and in the tenth volumė of the "Encyclopédie Méthodique" give definite bibliographic citations to Latreille's "Familles naturelles du Règne Animal" under several genera (*e.g.v.* their reference under *Pompilus*). Conversely, Latreille refers to a number of genera Lepeletier and Serville erected in the "Encyclopédie Méthodique" (e.g. *Aglaë*, *Mesocheira*, *Mesonychium*, *Dioxys*). Yet Latreille proposed in the "Familles naturelles du Règne Animal" certain genera like *Lithurgus* [*Lithurge*] and *Ancyloscelis* [*Ancyloscèle*] which are not noted by Lepeletier and Serville. Obviously both Latreille and Lepeletier and Serville were in close communication with each other, and furthermore the "Familles naturelles du Règne Animal" and the first part of the tenth volume of the "Encyclopédie Méthodique" were published at approximately the same time. Consequently until it can be definitely proven which of these publications appeared first, it will probably be best to continue to accredit the name *Planiceps* to Latreille who indubitably is the author of the genus.

In 1827, Berthold in the "Naturliche Familien des Thierreichs" likewise gives a brief characterization of *Planiceps* but makes no definite mention of any species by name other than by referring to Latreille's 1809 work "Genera Crustaceorum et Insectorum" wherein *Pompilus planiceps* Latreille, 1809 was described.

In the first part of his memoir on the fossorial Hymenoptera of Europe, published in 1827, Van der Linden for the first time couples a specific name—*latreillei* Van der Linden—with the generic name *Planiceps*. Van der Linden's species *Planiceps latreillei* is merely another name for *Pompilus planiceps* Latreille, 1809.

Finally in 1828, Latreille in the "Dictionnaire classique d'Histoire Naturelle" discusses *Planiceps*, includes two species in it, and designates *Planiceps latreillei* Van der Linden, 1827 [=*Pompilus planiceps* Latreille, 1809] type. The date of this reference is generally given as 1822 but incorrectly so. The "Dictionnaire classique d'Histoire Naturelle" is a work of seventeen volumes, the first of which appeared in 1822, the last in 1831. So far as I can determine, there is no mention of the name *Planiceps* in any of the volumes dated 1822, nor in any of the volumes prior to the fourteenth in which appears Latreille's article on *Planiceps* and which was published in 1828.

All these earliest proposals and references to the name *Planiceps* are actually or inferentially based on *Pompilus planiceps* Latreille, 1809. Thus all are absolutely equivalent from a nomenclatorial standpoint.

PSAMMOCHARES Latreille

Psammochares Latreille, Précis car. génér. Insect., p. 115, (1796).—Latreille, Hist. Nat. Crust. Insect., III, pp. 334–335, (1802–1803).—Latreille, Nouv. Dict. Hist. Nat., XXI, p. 158, (1803).—Banks, Journ. New York Ent. Soc., XVIII, p. 114, (1910).—Banks, Journ. New York Ent. Soc., XIX, p. 219, (1912).

[*Pompilus* Fabricius, Suppl. Ent. Syst., pp. 212, 246–252, (1798).—Latreille, Hist. Nat. Crust. Insect., III, pp. 334–335, (1802–1803).—Latreille, Consid. gener. Insect., Tabl. Gen., p. 437, (1810).]

Anoplius Dufour, Ann. Soc. Ent. France, II, p. 483, (1834.)

Aphilociemus Ashmead, Canad. Entom., XXXIV, p. 87, (1902).

Latreille established *Psammochares* in his "Précis" of 1796, but cited no species as exponents of the genus. In 1802, under a discussion of *Pompilus*, which Fabricius had proposed in 1798 for thirty-seven species, Latreille remarked: ". . . J'avois établi le premier ce genre sous le nom psammochare. J'abondonne voloutier cette dénomination pour prendre celle de *pompile*, qui est plus douce à l'oreille," and reiterates this statement in one or another form in many of his subsequent works.

In 1802, Latreille gave *Pompilus viaticus* F[abricius, 1798 = *Sphex viatica* Linnaeus, 1758] as an *exemple* of *Pompilus*, and as a consequence many authors assume that according to the provisions of Opinion 46, *viaticus* is the first species published in connection with the generic name *Psammochares* and thus becomes *ipso facto* type of *Psammochares*. Others believe that when in 1810 Latreille designated *Pompilus viaticus* F., type of *Pompilus* Fabricius, 1798, he likewise fixed this species as type of *Psammochares* Latreille, 1796. I cannot agree with either of these views. Firstly, Latreille, in citing in 1802 *Pompilus viaticus* F., as an *exemple* of *Pompilus* Fabricius, did not include merely this one species in *Psammochares;* his subsequent "remarques" are sufficiently explicit so that we may consider that *Psammochares* had referred to it in 1802 the thirty-seven species Fabricius originally included in *Pompilus* in 1798.[180] Secondly, *Psammochares* and *Pompilus* were formed independently by different authors, without designation of genotypes. And according to the provisions of Opinion 10, if two genera with the same limits are formed independently by different authors, without designation of genotypes, any subsequent author may designate the genotypes; if the types designated are not specifically identical the two generic names may (other things being equal) be used for restricted genera containing the types in question. Thirdly, when Latreille in 1810 selected *Pompilus viaticus* F., as type of *Pompilus* Fabricius, 1798 he did not also automatically designate this species type of *Psammochares* Latreille, 1796. Thus the case of *Psammochares* Latreille, 1796 is quite separate and apart from that of *Pompilus* Fabricius, 1798. Failure of authors to realize this cardinal point has resulted in the present nomenclatorial snarl of the two names.

Throughout the nineteenth century, authors almost universally employed Fabricius' name *Pompilus* for this genus, although many, like Latreille, Guérin, Lepeletier, Serville, Curtis, Shuckard, Westwood and others, generally cited *Psammochares* Latreille as a synonym of it. In 1901, however, Fox[181] stated that *Pompilus* Fabricius, 1798 was preoccupied by *Pompilus* Schneider, 1784,[182] and that it was necessary to adopt another name for the genus: after some discussion of the case, he suggested *Aporus* Spinola, 1808 as a substitute. No mention of Latreille's name *Psammochares* was made until Banks resurrected it in 1910,[183] discussed the situation briefly and stated that he intended to use *Psammochares* and Psammocharidae henceforth in place of *Pompilus* and Pompilidae.

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[180] I believe this interpretation is permissible and sound after a study of the full text of Opinion 46 and the exposition given there of the five different categories.

[181] Ent. News, XII, pp. 267–268, (1901).

[182] Samml. verm. Abh., p. 128, (1784). I have studied a copy of this work and found that Fox was mistaken; Schneider employed *Pompilus* as a specific name in his new genus *Octopodia*. However, in view of the peculiar typography of Schneider's work, it is easy to see how Fox was misled. Sherborne and others have made the same mistake. *V.et.*: appendix to Opinion 166 (Hemming), I. C. Z. N.

[183] Journ. New York Ent. Soc., XVIII, p. 114, (1910).

Various species have been designated or regarded as type of *Psammochares*. Some authors believe Latreille fixed *Pompilus viaticus* F., as type of the genus in 1802,[184] but, as I have indicated on a preceding page, I do not consider this a valid designation. In 1803 Latreille, under a discussion of *Sphex*, in the twenty-first volume of Deterville's "Dictionnaire" remarks: ". . . M. Fabricius en sépara ces insectes [*Sphex*] disparates; mais il n'épura pas encore parfaitement le genre, puisqu'il y laissa des insectes qui ont bien de très-grands rapports avec les *sphex*, mais dont les parties de la bouche sont très-différentes, *sphex sabulosa*, *sphex fusca*. J'entrepris de terminer la réforme, et je créai le genre *psammochare* (*qui aime le sable*), en prenant pour type le dernier insecte qui viens de citer." [185] This I believe to be the first valid designation of a type for *Psammochares:* the species given by Latreille—*Sphex fusca* Linnaeus, 1761—was one of the thirty-seven originally included by Fabricius in *Pompilus*. The next designation of a type for *Psammachares* was made by Sustera who in 1913 selected *Sphex plumbea* Fabricius, 1787.[186] Both Haupt[187] and Arnold[188] accept this species as type of *Psammochares*. But there is some question whether Sustera's designation is entirely in accordance with present nomenclatorial practice; *plumbea* F., was not originally included by Fabricius in *Pompilus*. Fabricius, however, did include in *Pompilus* a new species named *pulcher*. And long before 1912 it was generally recognized that *Pompilus pulcher* Fabricius, 1798 was a synonym or at best merely a race or variety of *Sphex plumbea* Fabricius, 1787. In any event, Sustera's designation is long ante-dated by Latreille's selection of *Sphex fusca* Linnaeus, 1761 as type of *Psammochares*. With the adoption of *fusca* as type, the name

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[184] Hist. Nat. Crust. Insect., III, p. 335, (1802–1803).

[185] Nouv. Dict. Hist. Nat., XXI, p. 158, (1803). To Rohwer must go full credit for unearthing this reference (*v.* Opinion 166, (Hemming), I. C. Z. N.), but the citation he gives (Nouv. Dict. Hist. Nat., V, p. 158) is inaccurate. Mr. C. F. W. Muesebeck has kindly supplied me with the information that the twenty-first, rather the fifth, volume was meant, and I have verified this by an examination of the text.

[186] Verh. k. k. Zool. Bot. Ges. Wien, LXII, p. 210, (1913).

[187] Deutsch. Ent. Zeitschr., Beiheft, 1926, p. 151, (1927).

[188] Ann. Transvaal Mus., XIX, p. 43, (1937).

Psammochares must be shifted to the group which has hitherto been known as *Anoplius* Dufour,[189] and for *Psammochares* in the sense of Arnold and Haupt, the name *Aporoideus* Ashmead, 1902 is then available as Banks[190] and Richards[191] have indicated.

Fabricius erected *Pompilus* in 1798 for the reception of thirty-seven species, and in 1810 Latreille fixed *Pompilus viaticus* F[abricius 1805 and 1798 = *Sphex viatica* Linnaeus, 1758] as type of it.[192] In selecting this species, Latreille was undoubtedly influenced by the intent of Fabricius who, if we follow the very interesting argument advanced recently by Malaise,[193] considered, although he never designated in the modern sense, *viaticus* type of *Pompilus*.

The exact identity of *Pompilus viaticus* F. has been misunderstood for well over a hundred years. It is the same as *Sphex viatica* Linnaeus, 1758, which Linnaeus states has the abdomen subsessile and that it, ". . . fodit cuniculum, occidit larvam Phalaenae, attrahit, sepelit, imposito ovo, obturat." [194] These features are certainly not characteristics of a spider wasp. An examination of the figures, and the accounts as well, of Frisch, Degeer, and others cited by Linnaeus in 1758 and also in his earlier and later works show a wasp that is indubitably a Sphecoid rather than a Psammocharid. Moreover, Richards[195] substantiates this view; for, upon examination of the type of *Sphex viatica* Linnaeus, 1758, he has found it to be a specimen of what is now generally known as *Podalonia hirsuta* (Scopoli, 1763). Thus the generic name *Pompilus* Fabricius, 1798 must be transferred to the Sphecidae where it will take precedence over *Podalonia* Spinola, 1851.

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[189] Haupt (1927, Deutsch. Ent. Zeitschr., 1926, Beiheft, p. 230) regards *Anoplius* Dufour as only a subgenus of *Psammochares*.

[190] Proc. Acad. Nat. Sci. Philadelphia, XCII, p. 353, (1941).

[191] Gen. Names Brit. Insects, pt. 5, p. 126, (1937).

[192] Consider. gener. Insect., p. 437, (1810).

[193] *V.* Ent. News, XLVIII, pp. 130–134, (1937). *V. et.*: Ent. Tidsskr., XXVIII, pp. 99–106, (1938).

[194] Systema Naturae, ed. X, p. 570, (1758).

[195] Trans. R. Ent. Soc. London, LXXXIII, p. 165, (1935).

The nomenclatorial history of *Pompilus* subsequent to 1810 is checkered. In 1828, both Curtis[196] and Guérin[197] list *Psammochares* Latreille as a synonym of *Pompilus* Fabricius and designate *Pompilus viaticus* L., type of the latter. In 1837, Shuckard[198] also recognizes *Psammochares* as a synonym of *Pompilus*, but states the type of the latter is *P*[*ompilus*] *fusca* Linn. [=*Sphex fusca* Linnaeus, 1761=*Psammochares fuscus* (L.)]. In 1840, Westwood[199] lists *Psammochares* as a synonym of *Pompilus* and fixes as type of the latter *Sph*[*ex*] *gibba* L. [=*Sphecodes gibbus* (L.)]. In 1897, Bingham[200] agrees with Shuckard, and cites *Sphex fusca* L., 1758 as type of *Pompilus*. In 1937 Richards[201] in the Generic Names of the British Aculeate Hymenoptera states under *Pompilus* that the "Type (to be fixed by the International Commission)=*Pompilus pulcher* Fabricius, 1798." Finally in 1945, Francis Hemming proclaimed a bull[202] which decreed that *Pompilus pulcher* Fabricius, 1798 was to be regarded the type of *Pompilus* Fabricius, 1798; suppressed *Psammochares* Latreille, 1796; and commanded zoologists to use henceforth only *Pompilus* and Pompilidae.

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[196] Brit. Entom., v, p. 238, (1828).

[197] Dict. Class. Hist. Nat., xiv, p. 204, (1828).

[198] Essay Indig. Foss. Hymen., p. 48, (Jan. 2, 1937).

[199] Introd. Mod. Class. Insect., ii, Gen. Syn., p. 82, (Jan. 1840).

[200] Fauna Brit. Ind., Hymen., i, p. 148, (1897).

[201] Gen. Names Brit. Insects, pt. 5, p. 126, (1937).

[202] Opinion 166 (Hemming), I. C. Z. N. In the introductory matter of this bull, I find my name as a subscriber to this view. However, I signed this petition about twenty years ago when I knew relatively little about the merits of the case: I suspect the same was then true of many of my co-signers. Since then many new facts, unknown at that time, have been brought to light, and much water has flowed under the bridge, not the least of which was the lingering and final demise of the Commission on Zoological Nomenclature sometime between 1935 and 1940 and the assumption of its duties by the Hemming committee. Moreover, the petition originally signed and presented to the Commission requested that *Sphex viatica* L., 1758, not *Pompilus pulcher* F., 1798, be designated type. In view of this abrupt substitution, I cannot consider valid the recent action of the Hemming committee. Finally, I cannot condone the cavalier manner in which Mr. Hemming and his fellow committeemen dispose of the argument presented by S. A. Rohwer on behalf of the Entomological Society of Washington.

Since 1900 there has grown up a great mass of literature on this group under the name Psammocharidae. This far surpasses in magnitude, bulk and importance that of the preceding hundred years during which relatively little attention was paid to these wasps. Beginning in 1910, Banks has published a large number of papers on the faunae of North and South America, the Philippines, Oceania and other regions: many of these are synoptical in nature. Arnold has presented his great monograph on the African forms. Haupt has reviewed the European forms and published a long series of papers on other regions of the world. Various other authors have made many taxonomic and biological contributions. All have used *Psammochares* and Psammocharidae for this family. Only the insular British, a few French workers, and certain isolated intransigents have continued to use *Pompilus* and Pompilidae: such contributions are almost invariably minor in character. Moreover, the authors of many text books and manuals have adopted *Psammochares* and Psammocharidae[203] when treating the insects of this family. To discard *Psammochares* and Psammocharidae now and revert to *Pompilus* and Pompilidae would be obviously ridiculous and absurd. It would cause far more confusion than uniformity for at least a generation if not more. Furthermore, an action like this would only bring disrepute to taxonomy and systematists. Therefore I shall continue to use *Psammochares* and Psammocharidae for this family, and transfer *Pompilus* to the Sphecidae.

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[203] To cite a few examples. Texts and manuals, such as: Viereck, Rohwer et al., *Hymenoptera of Connecticut*, 1916. Tillyard, *Insects of Australia and New Zealand*, 1926. Essig, *Insects of Western North America*, 1926. Bischoff, *Biologie der Hymenopteren*, 1927. Schmiedeknecht, *Hymenopteren Nord- und Mitteleuropas*, 1930. Hedicke, *Die Tierwelt Deutschlands: Hymenoptera*, 1930. Lameere, *Précis de Zoologie:* vol. V.—*Insectes*, 1938. Clausen, *Entomophagous Insects*, 1940. Essig, *College Entomology*, 1942. McKeown, *Australian Insects*, 1942. Matheson, *Entomology for Introductory Courses*, 1944. Also check-lists like: Leonard, *Insects of New York*, 1928. Johnson (1927) and Procter (1938, 1946), *Insects of Mt. Desert Island*. Brimley, *Insects of North Carolina*, 1938. Wolcott, *Insectae Portoricensis*, 1923, and *Insectae Borinquenses*, 1938. Esaki et al., *Iconographia Insectorum Japanicorum*, 1932. Also catalogues such as: Wu, *Catalogus Insectorum Sinensium*, 1937–1941.

APPENDIX II

Since writing the foregoing, I have discovered that in his *The Insect Book*, published in [June?] 1901, L. O. Howard inadvertently anticipated Ashmead's proposal of several generic names of Psammocharidae. For the most part this will cause no trouble save that the names *Poecilopompilus*, *Sericopompilus*, and *Sophropompilus* must henceforth be credited to Howard, 1901 rather than to Ashmead, 1902. The names of both authors are isogenotypic. However, *Arachnophroctonus* Howard, 1901 is quite different from *Arachnophroctonus* Ashmead, 1902 and consequently a new name, *Zarachnophroctonus*, is proposed below for the latter. In addition, Howard anticipated Schulz's emendation of *Ceropales* to *Ceratopales*.

The Psammocharid generic names which appear for the first time in Howard's *Insect Book* are listed below.

Arachnophroctonus Howard, 1901. The Insect Book, Pl. VII, fig. 11 (*Arachnophroctonus tropicus* [= *Sphex tropicus* Fabricius, 1775 not of Linnaeus, 1758 = *Psammochares fabricii* Banks, 1933]); Pl. VII, fig. 14 (*Arachnophroctonus atrox* [= *Pompilus atrox* Dahlbom, 1843]).

TYPE: *Sphex tropicus* Fabricius, 1775 not of Linnaeus, 1758 [= *Arachnophroctonus tropicus* (Fabricius) = *Psammochares* (*Arachnophroctonus*) *fabricii* Banks]. (By present designation.)

Ceratopales Howard, 1901. The Insect Book, Pl. V, fig. 10 (*Ceratopales bipunctatus* [= *Ceropales bipunctatus* Say, 1824]).

TYPE: *Ceropales bipunctatus* Say, 1824. (Monobasic.)

Poecilopompilus Howard, 1901. The Insect Book, Pl. V, fig. 1 (*Poecilopompilus interruptus* [= *Ceropales interrupta* Say, 1837]); Pl. XI, fig. 18 (*Poecilopompilus navus* [= *Pompilus navus* Cresson, 1867]).

TYPE: *Pompilus navus* Cresson, 1867 [= *Poecilopompilus navus* (Cresson)]. (By present designation.)

Isogenotypic with *Poecilopompilus* Ashmead, 1902, *q.v.*

Pompilogaster Howard, 1901. The Insect Book, Pl. V, fig. 19 (*Pompilogaster aethiops* [= *Pompilus aethiops* Cresson, 1865]).

TYPE: *Pompilus aethiops* Cresson, 1865 [= *Pompilogaster aethiops* (Cresson) = *Lophopompilus aethiops* (Cresson)]. (Monobasic.)

Isogenotypic with *Pompilogastra* Ashmead, 1902, *q.v.*

Sericopompilus Howard, 1901. The Insect Book, Pl. XI, fig. 17 (*Sericopompilus cinctipes* [= *Pompilus cinctipes* Cresson, 1867]).

TYPE: *Pompilus cinctipes* Cresson, 1867 [= *Ceropales apicalis* Say, 1837* = *Sericopompilus apicalis* (Say)]. (Monobasic.)

Isogenotypic with *Sericopompilus* Ashmead, 1902, *q.v.*

Sophropompilus Howard, 1901. The Insect Book, Pl. VII, fig. 13 (*Sophropompilus ingenuus* [= *Pompilus ingenuus* Cresson, 1867]).

TYPE: *Pompilus ingenuus* Cresson, 1867 [= *Sophropompilus ingenuus* (Cresson)]. (Monobasic.)

Isogenotypic with *Sophropompilus* Ashmead, 1902, *q.v.*

Zarachnophroctonus new name for *Arachnophroctonus* Ashmead, 1902 not of Howard, 1901.

TYPE: *Ceropales ferruginea* Say, 1824 [= *Zarachnophroctonus ferrugineus* (Say)].

Isogenotypic with *Arachnophroctonus* Ashmead, 1902, *q.v.*

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* If *Sericopompilus* is considered to be merely a subgenus of *Psammochares* then *Ceropales apicalis* Say, 1837 becomes a homonym of *Pompilus apicalis* Van der Linden, 1827. The next name available for the species then is *Pompilus fuscipennis* Lepeletier, 1845, which Smith in 1855 renamed *Pompilus sordidus* under the misimpression that Lepeletier's name was a homonym of *Pompilus fascipennis* Say, 1824.

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A SYSTEMATIC REVISION OF THE HOLARCTIC GENUS PLATYCERUS GEOFFROY

(COLEOPTERA: LUCANIDAE)

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(Plates 4 to 9)

The present essay is a continuation of recorded studies of the coleopterous family Lucanidae, which appeared occasionally in these *Transactions* and in *Entomological News* and elsewhere;[1] it is divided into three parts, viz., preface, general and systematic taxonomy.

PREFACE

Obviously no individual can assemble expeditiously, in private, sufficient material on which a revision of this category could be based; the writer was fortunate indeed to have had free access to study our largest institutional and private collections, without which this revision could not have been accomplished.

In acknowledgment the writer wishes to express his heartfelt gratitude to all who had been instrumental, by loans of specimens or otherwise, in promoting this contribution and bringing it to a successful conclusion. The co-operation of the following institutions (individuals responsible in parentheses) is gratefully acknowledged: Academy of Natural Sciences of Philadelphia (J. A. G. Rehn, E. T. Cresson Jr.); American Museum of Natural History, New York (H. F. Schwartz, C. H. Curran, M. A. Cazier); Carnegie Museum, Pittsburgh (A. Avinoff, W. R. Sweadner);

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[1] Trans. Amer. Ent. Soc., LXIII, pp. 1–16, pls. 1–3, 1937. Entom. News, XLIII, pp. 40–41, 1932; XLVII, pp. 111–112, 1937; XLIX, pp. 271–274, 1938; LIII, pp. 221–223, 1942; LV, pp. 45–47, 1944. Psyche, L, pp. 37–48, pl. 4, 1943. Trans. Nat. Hist. Soc., Formosa, XXVI, pp. 9–14, 1936.

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On the ensuing pages is reviewed the genus *Platycerus* Geoffroy, briefly mentioned in a previous contribution [2] with recommendation that the genus be assigned a place by itself, as it was alien to the Dorcinae, with which it has been erroneously united by ancient writers, and retained there ever since. The recommendation advanced at the time was based solely on pertaining literature and not on actual examinations of members of the genus; subsequent exacting studies, however, fully corroborate former views, proving the genus unsuitable as a component of Dorcinae. Careful perusal of extant descriptive literature and precise examination of much material, comparison of types and subsequent dissection of typical forms, plus correspondence with foremost students of to-day, convince me that these species, a heterogeneous conglomeration of unlike affinities, form a composite genus, with several sound phylogenetic groups or series. The significant common character, of all the species, is the visible sixth ventral sclerite of the abdomen, by which they can be segregated into a self-contained tribe, and subdivision of the species according to indicated phylogeny gives us substantial divisions with specific characters of generic values, and treated here as genera.

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[2] Trans. Amer. Ent. Soc., LXIII, p. 15, 1937.

The new tribe may properly be called *Platycerini,* a name derived from the parental genus, and the units embraced therein, recognized here as genera, may receive names denoting their relationship or affinity. One of these units, as should be expected, contains the original members for which the name *Platycerus* was retained by Latreille, defined here as the true *Platycerus* sensu stricto, with representatives in both the palaearctic and nearctic zoogeographical regions; the second unit (which I propose to call *Platyceroides*), consists of the species by inadvertence added to *Platycerus* s. str., with species of restricted range and endemic to the Pacific Coastal Belt of nearctic region. As defined herein, the genus *Platycerus* contains six species, with two species (*piceus* and *virescens*) removed from synonymy and two (*depressus* and *quercus*) suppressed; *Platyceroides* includes all the species (seven) in the *agassizi* group of previous authors, with one species (*thoracicus*) removed from synonymy and restored to specific status; *Platycerus keeni* Casey, although distinct, for convenience is tabulated with the species of *Platyceroides,* and forms the monotypic genus *Platyceropsis.* The three genera, fully covered in the taxonomic conspectus, form a homogeneous tribe with certain features analogous to Aesalinae, due to which the tribe must be considered a component of the subfamily Aesalinae.

In composition the present paper is an assemblage of original descriptions [3] of species treated, past recorded observations and criticisms, and annotations by the writer, wherever such were deemed appropriate.

GENERAL

History.—The genus *Platycerus,* as conceived by Geoffroy, was an all-inclusive one for the then known lucanids endemic to France, including members of present day genera *Lucanus, Dorcus* and *Platycerus,* each with well-defined characters. Why Geoffroy proposed the new name is not clear, nor the necessity for its adoption, as the Linnean *Lucanus* was already well accepted and in general use.[4]

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[3] The Publication Committee of this Society does not approve of the republishing of original descriptions except where it is necessary to make reference to certain features. This objection is waived as regards the present paper because the author considers these descriptions on the whole accurate and sufficient except where discrepancies are noted.

That its acceptance and usage was not favored is shown by Olivier (1789), who uses *Lucanus* instead of *Platycerus,* explaining: "the word *Platycerus,* as its name implies, is derived from the very long, projecting mandibles, rather large at their base, with which insects of this genus are provided and resembling on first view cornute species; the mandibles, however, are not horns; they are mobile, constituting a part of the insect's mouth, and do not differ except by their size from those of all other beetles. This reason, without doubt, caused Linne to utilize a word used by Pline, rather than adopt one which gives an inaccurate idea of the aspect of these insects."

We really can credit Latreille[5] with the resurrection of *Platycerus;* he is the first to utilize the name for a restricted genus, incorporating under it *Lucanus caraboides* L. (= *Platycerus*) and *L. tenebrioides* Fab. (= *Ceruchus*). Later Boisduval[6] added *Platycerus foveicollis* (= *Figulus*), and Castelnau[7] *Platycerus furcatus* (= *Ceratognathus*), thus increasing the number of species to four, which Burmeister[8] reduced to two by reallocation and reassignment of *Lucanus quercus* Weber, to its proper position; these in turn were again supplemented by the addition of a new species (*depressus*) by Leconte.[9]

There are no records of serious changes in the set up of *Platycerus* until 1854, and it remained for Westwood[10] to add the master stroke to the genus, when he tersely reports: "I unite the *Ceruchus* and *Platycerus* of MacLeay, to *Lucanus*. *Platycerus*, Latr. (*Dorcus,* MacLeay) has the eyes entirely divided transversely by the margin of the head; the maxillae are terminated by a shorter and broader lobe. *Lucanus parallelipipedus,* Fab. (the small Stag-beetle, commonly found in England). I also reunite to *Platycerus* the *Nigidius, Aegus* and *Figulus* of MacLeay." This statement certainly must have had much influence on entomologists of the day, activating many, while giving others a different slant to the complex; however, any conscientious worker will readily see the fallacy of the statement. A glance will suffice to see that Latreille's two species of *Platycerus* (*caraboides* and *tenebrioides*) are the same upon which MacLeay based his genera *Ceruchus* and *Platycerus*, and have nothing in common with *Lucanus*. *Platycerus* Latr. and *Dorcus* MacLeay have the eyes entire or nearly so, and not "entirely divided transversely by the margins of the head", which it is assumed is the present day canthus. The genotype of *Dorcus* is *Lucanus parallelipipedus* L., which, we are sure, everybody will agree cannot be confused with *Platycerus; Nigidius* and *Figulus* are representatives of a group in which both sexes have the inner maxillary lobe (lacinia) terminated in a backward-directed hook, now known as the subfamily Figulinae, and *Aegus* minus the hook-like appendage is too distinct to require a comment.

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[4] It is not generally known that the name *Lucanus* was first used, in modern sense, by Linne, in "Genera Insectorum," London, broadside edition of Systema Naturae, 1743–1745. Scopoli, generally credited with the name, adopted *Lucanus* at a much later date (1763). The genus is properly defined by Linne, hence credit should go to him; anent this, Albers (Deutsche Entom. Zeitschr., xxxv, 319, 1891) remarks: "die Gattung *Lucanus* ist von Linne schon in der ersten Ausgabe seines Systema naturae, also lange vor Geoffroy oder Scopoli aufgestellt. Hat er nun auch in den folgenden Ausgaben die ihm bekannten *Lucanus*-Arten unter *Scarabaeus* aufgeführt und die Gattung *Lucanus* erst in der 12. Ausgabe seines Natursystems wieder auferstehen lassen, so ändert das in Beziehung auf die Prioritat-Rechte nichts, denn was dem Geoffroy und dem Scopoli Recht gewesen ist, ist ihm erst recht gewesen."

[5] Hist. Nat. Crustacés et Insectes, x, p. 248, 1805.

[6] Voy. Astrolabe, Col., p. 239, 1832.

[7] Hist. Nat. Ins., Col., II, p. 174, 1840.

[8] Handbuch der Entomologie, v, p. 404, 1847.

[9] In Agassiz' Lake Superior, p. 224, 1850.

[10] In Cuvier's Animal Kingdom, p. 529, 1854.

Fortunately this state did not endure, for shortly thereafter Lacordaire,[11] revised the genera of beetles and gave *Platycerus* a due share of attention. He defined the genus so clearly and with such accuracy that the diagnosis stands, without alterations, to our times. The description is as follows:

> "Mâle: Menton plane, en demi-cercle, cachant la languette et les mâchoires. La première très-petite, cordiforme. Lobes des mâchoires coriaces, pénicillées; l'interne très-court, l'externe trigone.—Palpes médiocres; le dérnier des labiaux plus grand que les précédents; le 2^{e} des maxillaires plus long que le 4^{e}.—Mandibules à peine aussi longue que la tête, épaisses, horizontales, en tenailles, pluridentées à leur extrémité.—Saillie intermediaire grêle, descendant entre les mandibules.—Tête en carré transversal, largement déprimé en avant, avec son bord antèrieur échancré.—Yeux arrondis, entiers.—Antennes médiocres; leur massue formée de cinq (sic!) articles dont le 1^{er} tres-grêle, le 4^{e} grand.—Prothorax transversal, arrondi et rebordé latéralement, tronque a sa base avec ses angles distincts, faiblement

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[11] Hist. Nat. Ins., Genera des Coléoptères, III, p. 32, 1856.

> énchancré en avant.—Elytres de la largeur du prothorax, allongées, parallèles, arrondies en arrière.—Pattes médiocres, peu robuste; jambes antérieures multidentées; les quatre postérieures inermes; tarses un peu plus courts que les jambes.—6^e^ segment ventral visible.—Mesosternum plane.—Prosternum formant une carène arrondie entre les hanches antérieures.—Corps oblong, déprimé."
>
> "Femelle: Mandibules à peine de la moitié de la longueur de la tête.—Celle-ci petite.—Elytres un peu plus larges que le prothorax.—Une épine parfois absente aux jambes intermédiaires."

Translation: Male. Mentum smooth, semi-circular, concealing the labium and maxillae; former very small, cordiform.—Maxillar lobes coriaceous, penicillate; interior very short, external trigonal.—Palpi moderate; last segment larger than the preceding; 2nd segment longer than the 4th.—Mandibles scarcely as long as the head, thickened, horizontal, pincerlike, pluridentate at their extremities. Intermandibular process (clypeus) slender, sloping toward the mandibles.—Head transverso-quadrate, broadly depressed in front, with its anterior margin emarginate.—Eyes round, entire.—Antennae moderate; its clava composed of five[12] segments, first very slender, fourth large. Prothorax transversal, round and laterad reflexed, truncate at base with distinct angles, feebly emarginate in front.—Elytra as broad as the prothorax, elongate, parallel, rounded behind.—Legs moderate, not stout; anterior tibiae multidentate; the four posterior unarmed; tarsi slightly shorter than the tibiae.—Sixth ventral segment visible.—Mesosternum smooth.—Prosternum forming a rounded keel between the coxae.—Body oblong, depressed. Female: Mandibles scarcely half as long as the head, latter small.—Elytra slightly broader than prothorax.—Spine of intermediate tibiae occasionally absent.

Lacordaire (1856) assigned four species (*caraboides, depressus, oregonensis* and *quercus*) to *Platycerus;* to these were added, in sequence, by Leconte (1861) *agassizi,* Schaufuss (1862) *spinifer,* Deyrolle (1864) *ebeninus*[13], Parry (1864) *caucasicus,* Casey (1875) *parvicollis* and *pacificus, californicus* (1885), *keeni* and *thoracicus* (1895), *chalybaeus* and *marginalis* (1897), Lewis (1883) *delicatulus,* Fairmaire (1892) *delagrangei,* Fall (1901) *latus* and *opacus* (1906), which were all (excepting *spinifer*) considered valid species and are so recorded by Van Roon[14]. Since the issuance of Van Roon's catalogue, the list was augmented by *pedicellaris* Möllenkamp[15] and *laticollis* Casey,[16] and, several years later, Dr. Van Dyke[17] published a synopsis, including descriptions of new species (*aeneus*) and subspecies (*cribripennis*), plus some incorrect synonymies, repeated *ad nauseam* by Nagel.[18] The last recorded addition is by Benesh (1942), who added another species (*viriditinctus*), thus bringing the number of species and subspecies to twenty-four.

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[12] This is the only error of importance in the entire diagnosis; the clava is positively quadrilamellate.

[13] *Platycerus ebeninus* Deyrolle (Ann. Soc. Ent. France (4) IV, p. 317, pl. 4, fig. 4, 1864) is now the genotype of a new genus *Colocephalaria* Didier (Etudes sur les Coléoptères Lucanides du Globe, fasc. 5, p. 124, 1929); however, the insect is a true *Metadorcus,* a member of Brazilian and Uruguayan fauna, in which genus *ebeninus* should be incorporated by systematists, the name *Colocephalaria* thus passing into synonymy as another superfluous generic name in Lucanidae.

[14] Catalogus Coleopterorum, Pars 8: Lucanidae, 1910.

In this paper fourteen species are recognized as valid, while all the others are considered mere forms, color phases or absolute synonyms and are treated as such.

Biology.—The length of the life cycle of *Platycerus* is apparently of one year duration; Schaufuss[19] reports its pupation in August, the immature insect remaining in hibernacula over winter, emerging in spring and subsisting on the buds of oak, etc. Mating, according to Blatchley,[20] occurs early in May, with apparent oviposition and larval stage of approximately ninety days duration, the greater part of the life cycle being spent by the insect in dormant stage, hibernating; such immature insects, usually not fully pigmented, give rise to such queries as "what is the insect with prothorax and legs pinkish, wing covers rufous, etc.", accounting, perhaps, for some of those European "Farbenspielen" and subspecies.

The egg (fig. 1) of *Platycerus marginalis* Casey is ovate, slightly flattened mediad, .6 mm wide and .9 mm long, finely granulate, and of dirty white appearance. (The egg here figured is a "by product" of dissection; eggs were discovered during the examination of a gravid female. In all, eight ova were secured. The leaf-like appendage figured on the egg, is a rupture by dissecting needle, sustained during the extraction of the egg.)

The larva (fig. 2) of *P. oregonensis* Westw. is of the usual scarabaeid form, grayish-white, thorax laterad slightly constricted and three-segmented, body apparently of nine segments, sides slightly compressed, with two round anal plates, each with a median, oblong,

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[15] Intern. Ent. Zeitschr., v, p. 302, 1911.
[16] Memoirs of the Coleoptera, v, p. 373, 1914.
[17] Pan-Pacific Ent., IV, pp. 105–111, 1928.
[18] Stettiner Entom. Zeitung, XCI, p. 93, 1930.
[19] Calwer's Käferbuch, ed. 6, p. 1254, 1916.
[20] Coleoptera of Indiana, p. 907, 1910.

black spot (fig. 4), setose dorsad. Head (fig. 3) rounded, broader than long, finely granulate throughout, antennae three-segmented (not including the basal piece), first segment nearly twice as long as the second, which is nearly three times the length of the terminal, acute segment; mandibles (fig. 3-a) short, acute, broad at base, with two inner teeth, black at tip and on sides; clypeus transversal, twice as broad as long, lateral sides obliquely converging to front, front margin with several short, longitudinal, subobsolete impressions; labrum transversal, broader than the adjoining clypeus, rugose, sides rounded, front margin strongly setose, dorsad with two distant strong setae, twice as long as the marginal. Anal orifice (fig. 4) T-shaped,[21] transverse, with a median vertical arm, which extends to opposite the center of the black anal spots; these anal plates appear to acquire full pigmentation in the last instar, as the earlier instars are entirely white. The examples from which the foregoing is drawn are preserved at the Academy of Natural Sciences of Philadelphia, and are the fortunate find of Mrs. D. M. Fender, an ardent student of Cantharidae, to whom we are indebted for this long felt want. The larvae subsist on decomposing logs of several soft-wooded deciduous trees, rarely hardwoods, in contradistinction of larvae of such species as *Lucanus cervus* (L.) and *Dorcus* species, which, requiring several years to mature, oviposit only on logs and stumps of trees which require a long time for thorough decomposition. From economic standpoint, the insects are more or less beneficial as they assist in disposal of old logs and stumps, never attacking living plants, as far as known.

Technique.—The technique used in preparation of the material figured is essentially that used by Sharp and Muir [22] and Tanner.[23] The specimens were subjected to a degreasing and cleansing process (30–45 minutes in Barber's fluid), and if not sufficiently flaccid, were given a few minutes (10–15) soaking in hot water; after a thorough relaxation the body was removed and the genitalia extracted through basal (♂) or anal orifice (♀). All dissection was carried on in saline solution, maceration in caustic potash (15%) solution, thence cleared in water, xylol and aniline oil, followed by usual dehydration in absolute alcohol. All drawings were made with the aid of binocular microscope and camera lucida, under two magnifications, indicated on accompanying plates and called respectively scale A (35 ×) and B (16.5 ×), on plate 1, but carried on other plates without this explanation. All the figures are originals except figures 14 and 15, which were copied from the works of Sharp and Muir, but redrawn to scale used by the author.

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[21] Inverted broad T.

[22] Trans. Ent. Soc. London, pp. 573–576, 1912.

[23] Trans. Amer. Ent. Soc., LIII, p. 9, 1927.

The figures of genitalia were prepared expressly in response to a suggestion from Dr. Chapin, who noted that judging from experience he had had with similar problems in other families we will get nowhere until a careful study of the genitalia of *Platycerus* is made. However, he does not believe that all questions are answered by male genitalia, but does believe that in most groups they offer a better criterion of species than such characters as color or sculpture, or even proportional measurements.

I feel confident that the wealth of descriptive matter here assembled, plus the large number of figures, will facilitate the use of this monograph, undertaken with only one object in view: to instill a systematic study, and bring order into the chaos now existing in Lucanidae. It is hoped that the present contribution satisfies all needs and meets fully every task the student may encounter.

Disposition.—The types of all the species, as far as known, are specifically mentioned under each species, excepting those of Casey which are in the United States National Museum, Washington. The major part of all the material upon which this monographic revision was based, is in the collection of the American Entomological Society at the Academy of Natural Sciences of Philadelphia, plus some unique forms yet remaining in the author's collection, which, however, will be added to that series on the completion of additional studies.

SYSTEMATIC TAXONOMY

Tribe PLATYCERINI new tribe

Platycerinae Oberthür et Houlbert, Insecta, Rennes, III, p. 217, 1913.

Insects of moderate size, with body elongate, subconvex or depressed (except *Platyceropsis,* which is strongly convex), head small, slightly broader than long, and never broader than the prothorax; antennae 10-segmented, slender, manifold; prothorax narrower in front than at base, broader than long, basal angles never exceeding in width or protruding beyond the humeri; elytra parallel or nearly so, posterad semicircularly rounded; prosternal process obsolete or wanting, at most indicated by a low rounded keel, terminating on a plane with anterior coxae; body with sixth ventral segment[24] visible; legs slender (except *Platyceropsis*), of moderate length; tarsi polymorphous.

Key to the Genera of the Tribe Platycerini

1. Head in front semicircularly excised; clypeus obsolete; antennal clava quadri-lamellate and one and one-half times or twice as long as the funicle; mandibles nearly as long as the head, pluridentate (excepting *delicatulus* and *oregonensis*); body elongate, depressed; legs with intermediate and posterior tibiae without spines; alate **Platycerus** Geoffroy males

   Head not excised; clypeus broadly angular; antennal clava tri-lamellate; mandibles scarcely half as long as the head, edentate; intermediate and posterior tibiae spinose..2

2. Head with an angular obtuse carina; antennal clava not longer than the funicle and not differing in the sexes; body robust, obovate, strongly convex; legs fossorial, stout, trigonate in cross section; anterior tibiae palmate; intermediate and posterior tibiae hirsute and multispinose; male with wings atrophied, female apterous...**Platyceropsis** new genus

   Body subconvex or depressed, parallel; anterior tibiae with exterior margin visibly denticulate; intermediate and posterior tibiae spinose; tarsi in male longer than in the opposite sex.......................3

3. Head in front feebly excised, clypeus indistinct; antennal clava as long or longer than the funicle, compact; mandibles with a subapical tooth on inferior edge; intermediate tibiae spinose, posterior spineless; tarsi short; alate...........................**Platycerus** Geoffroy females

   Head without a frontal excision; clypeus produced; clava in male as long or longer than the funicle, distinctly shorter in female; tarsi abbreviated in females; males alate, females apterous.....**Platyceroides** new genus

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[24] Apparently *Diphyllostoma* Fall (Can. Entom., XXXIII, p. 290, 1901) belongs here too, as the author states: "Abdomen with six distinct segments."

PLATYCERUS Geoffroy

Scarabaeus Linnaeus, Systema Naturae, ed. decima, p. 354, 1758.
Platycerus Geoffroy, Hist. Ins. envir. Paris, I, p. 62, 1762.
Lucanus Scopoli, Entomologia Carniolica, I, p. 2, 1763.
Systenocerus Weise, Cat. Col. Europae et Caucase, p. 93, 1883. Cat. Col. Europae, Caucase et Armeniae rossicae, p. 177, 1891.
Systenus Sharp and Muir, Trans. Ent. Soc., London, p. 573, 1912.

Genus redefined.[25]—Elongate, subconvex or depressed. Head somewhat quadrate and in male semicircularly excised in front; round and smaller, less excised in female; clypeus very small or nearly obsolete; eyes round, entire; antennae of moderate length, with comb-shaped clava (quadri-lamellate in male, figs. 10, 16, 23, 28, 29, tri-lamellate in female, figs. 6, 17 and 25-c), its first segment (scape) somewhat shorter than the others combined, slender, glabrous; clava pubescent; mandibles porrect (slightly upward bent [fig. 30-b] in apical half in larger ♂ individuals), nearly as long as the head, thickened somewhat on the outer margin, inferior margin denticulate (excepting *delicatulus* and *oregonensis*); mandibles of female much shorter, acute above with a keel, which forms a forward-directed tooth (character inconstant) in apical third, inner edge laminate and ending in front by an inward-directed tooth (fig. 22); labium nude, inner maxillary lobe (lacinia) acute, not setose; galea much longer than the lacinia, produced into a point, fringed closely with adhering bristles; maxillary palpi fairly long. Prothorax without sternal protuberance; pronotum of male as wide as the elytra, of female narrower. Sixth ventral abdominal segment visible (in both sexes). Legs slender, anterior tibiae not broad, linear, exterior margin denticulate, distad strongly furcate; intermediate and posterior tibiae of male unarmed; female intermediate tibiae bear in the middle, on the exterior margin, one small spine (inconstant); posterior spineless (except ? *spinifer*); tarsi beneath clothed with silky fulvous pilosity; tarsi of male longer than in the opposite sex. Both sexes fully winged.[26]

GENOTYPE: *Scarabaeus caraboides* Linnaeus. Designated by MacLeay, Horae Entomologicae, I, p. 116, 1819.[27]

Assigned to genus *Platycerus,* as defined anteriorly, are the following: *caraboides* (Linnaeus), *delicatulus* Lewis, *marginalis* Casey, *oregonensis* Westwood, *piceus* (Kirby) and *virescens* (Fabricius).

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[25] Translated from Schaufuss (Calwer's Kaferbuch, ed. 6, p. 1253, 1916), with addenda by the writer.

[26] The writer desires to express his deep appreciation to Dr. O. L. Cartwright, Clemson College, S. C., for the copy of the original description.

[27] Retention of a single species (*caraboides*) in *Platycerus* and creation of a new genus (*Ceruchus*) for *tenebrioides,* is here considered as "designation."

Key to the Species of the Genus Platycerus

A. Mandibles internally not denticulate (*Oregonensis* Group)............1

B. Mandibles denticulate (*Caraboides* Group)..........................2

1. Mandibles internally not denticulate; head and pronotum black, elytra blue or perceptibly green; also black throughout, with green luster; pronotum with median longitudinal impression, sides more or less sinuate at the basal angles, which are obtuse; elytral striae very fine, not at all impressed, punctures fine........................**oregonensis** Westwood

Mandibles shorter than the head, acute, with a carinate keel from inner basal tooth to apices; prothorax modioliform (barrel-shaped), slightly broader at base, basal angles obtuse; elytra parallel, feebly striate and laterad rugose-punctulate; blue-black, nitid; legs bicolorous **delicatulus** Lewis

2. Mandibles internally denticulate; segments of antennal clava short, lobes slender, long; concolorous species..................................3

Segments of clava longer, lobes stout and blunt, of medium length; species of various colors..4

3. Black, nitid, occasionally obscurely bronzed; lobes of clava truncate in front (fig. 29); elytral striae coarse, distinctly impressed, punctures very fine, intervals convex.................... ......**piceus** (Kirby)

Black, opaque; elytra non-striate, sculpture smoother, finer and more superficial; lobes of clava cylindrical (fig. 28), funicle distinctly shorter than in *piceus*..................................**marginalis** Casey

Puncturation well defined, cribriform..forma **cribripennis** Van Dyke

4. Prothorax of small ♂ and ♀ with side margins arcuate, basal angles angulate, large ♂ individuals sinuate at basal angles, obtuse; mandibles manifold (figs. 21-a, b, c, d); color variable: black, rufo-piceous or rufous, with bluish, greenish or bronzy luster.....**virescens** (Fabricius)

Prothorax of ♂ with anterior angles produced, broad, rounded or truncate, anterior half of lateral margin crenate, posterior angle obtuse, ♀ with anterior half obliquely diverging to center, which is broadly arcuate and sinuous behind to basal angles, angles subacute; color, variable: green, blue, dark blue to wholly black................**caraboides** (Linnaeus)

Narrower form, bluish-green, more nitid....forma **caucasicus** Parry

Green, aenescent, intermediate and ? posterior tibiae spinose forma **spinifer** Schaufuss

Platycerus caraboides (Linnaeus)
(Pl. IV, figs. 12, 13; pl. V, figs. 14 to 18.)

Scarabaeus caraboides Linnaeus, Systema Naturae, edit. decima, p. 354, 1758. * Lepechin, Tagebuch der Reise, I, p. 313, 1774.[28]

Platycerus caraboides Geoffroy, Hist. Ins. environs Paris, I, p. 62, 1762. Fourcroy, Entomologia Parisiensis, I, p. 3, 1785. Latreille, Precis. d. caracter. gener. d. Ins., p. 2, 1802; Hist. nat. d. Crust. ent. Ins., x, p.

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[28] Those references preceded by an asterisk * have not been seen by the author and may or may not apply to the genus or species; they are cited on Schönherr's authority (Synonymia Insectorum).

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Platycerus cribratus Mulsant, Ann. Soc. Linn., Lyon, x, p. 7, 1863; Opuscules Ent., XIII, p. 7, 1863.
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Platycerus azurea Dalla Torre, Ber. Ver. Naturk. Österreich, Linz, x, p. 104, 1879.
Platycerus chalybaea[29] Ziegler (ined.), Dalla Torre, Ber. Ver. Naturk. Österreich, Linz, x, p. 104, 1879.[30]
Platycerus chlorizans Dalla Torre, Ber. Ver. Naturk. Österreich, Linz, x, p. 104, 1879.
Platycerus coeruleus Dalla Torre, Ber. Ver. Naturk. Österreich, Linz, x, p. 104, 1879.
Platycerus diabolus Dalla Torre, Ber. Ver. Naturk. Österreich, Linz, x, p. 104, 1879.
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Platycerus aeneus Weise, Cat. Coleop. Europae et Caucase, p. 93, 1883; Cat. Coleop. Europae, Caucase et Armeniae rossicae, p. 177, 1891.[30]
Platycerus delagrangei Fairmaire, Ann. Soc. Ent. Belg., XXXVI, p. 145, 1892.
Systenocerus viridicollis Depoli, Wiener Ent. Ztg., XXXVI, p. 190, 1917.
Systenocerus carniolicus Roubal, Deutsche Ent. Zeitschr., LXIII, p. 64, 1919.

Scarabaeus caraboides Linnaeus; original description: "Scarabaeus caraboides. 63. S. maxillosus, maxillis lunatus, thorace marginato. Habitat in Europa."

This meager description we can amplify by adding the diagnosis of Schaufuss:[31]

"Shining black, upper surface blue or greenish, also pure green, steelblue, violetblue, metallic green, metallic or brassy, bronze; also entirely black, glabrous; sometimes in ♀♀ underside of thorax, abdomen and legs pale red. Head and pronotum moderately, closely and fairly minutely punctuate. Prothorax almost twice as broad as long, sides rounded, posteriorly visibly more narrowed than in front, with acute at right angle projecting basal corners.

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[29] Cited by Depoli (Wiener Ent. Ztg., XXXVI, p. 191, 1917) under Erichson.
[30] No data available on this aberrant; cited by Weise (1883, 1891), but omitted by him in the succeeding edition of the catalogue (1906).
[31] Calwer's Käferbuch, ed. 6, p. 1254, 1916.

Scutellum smooth. Elytra parallel and partially striate-punctate, dorsum obscurely lined and feebly wrinkled. Posterior tibiae spineless. Length 10–14 mm. Central Europe."

P. caraboides (L.) is, in essence, variable in habitus, color and sculpture. The head in males is quadrate, bearing mandibles nearly as long as itself, which in large individuals with fully developed mandibles suffers proportionate enlargement for their accommodation, with corresponding increase in size of the anterior section of the prothorax. Usually the large males have the anterior angles of pronotum (fig. 16) broadly rounded, sometimes even truncate, crenate on lateral margin to about half the length of pronotum, margin broad and strongly reflexed; in smaller individuals the margin may be simple as in females (fig. 17); clava of antennae fairly loose in male, compact in female; in the latter, the last funicular segment is produced into a pointed lobe, the sensory area being confined to the three segments of clava (fig. 17).

Mandibles of large males resemble those of *piceus* (fig. 31), differing, however, by their upper tooth being mediad, below it more hollowed or excavated, sides more straight and rounded, not angular as in *piceus;* smaller males with mandibles similar to *virescens* (fig. 21-d), but of course, without the lateral angulation. Legs slender; posterior tibiae of female very short, and stouter, in comparison with those of a male of equal size.

Male genitalia (figs. 14, 15) with internal sac of fantastic configuration, flagellum slender, tapering to a fine point; female genitalia (figs. 18-a, b) with coxites slightly diverging, not heavily sclerotized, valvifer apparently absent or nearly obsolete, styli simply rounded; the dorsum is protected by a shield-like, transparent apron or plate, present in the other palaearctic species (*delicatulus*) but absent in American congeners.

The larvae are reported to subsist on deciduous trees (oak, beech, ash, etc.) and conifers,[32] and *Prunus, Padus, Acer,* and *Viburnum lantana.*[33]

Disposition of the Linnaean type unknown; probably at Uppsala, Sweden, or in the collection of the Linnean Society, London.

Although Schaufuss gives only central Europe as the habitat, *caraboides* ranges throughout the palaearctic region. It is recorded from northern Africa (Morocco, Tunis) by Peyerimhoff,[34] Continental Europe and the British Isles, exclusive of the extreme northern portions of Finland, Norway, Russia, Scotland and Sweden; Asia Minor (Iran, Syria, Turkey); and from the Ural Mountains eastward to Amur Region (P. Nagel, in litteris).

It is needless to point out that in such an extensive range, the species received much attention by local workers, who described many forms; that synonymies occurred goes without saying. In an attempt to rectify some of these inaccuracies Depoli[35] published a key for the separation of certain forms which could be recognized. Unfortunately the key does not encompass all the variants thus far recorded, being restricted to aberrants endemic to central Europe, mainly color phases, or what continental enthusiasts refer to as "Farbenspielen"; however, including a contemporary addition by Roubal,[36] it can be useful in identification, supplementing Schaufuss (1916).

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[32] Schaufuss, Calwer's Käferbuch, ed. 6, p. 1253, 1916.

[33] Dalla Torre, Ber. Ver. Naturk., Oesterreich, Linz, x, p. 104, 1879.

[34] In correspondence with author.

Key to aberrants (color phases) of Platycerus caraboides after Depoli[37]

I. Abdomen and legs black, with bluish sheen
  A. Dorsum blue-black.......................... **caraboides** (Linnaeus)
  B. Dorsum light green
      ab. **chalybaea** Erichson[38] (= *azurea* Dalla Torre)
  C. Dorsum more or less green
    a. head and pronotum blue-green, elytra blue-black
      viridicollis (Depoli)
    b. head and pronotum blue-green, elytra green or bronze
      ab. **viridiaenea** Mulsant
  D. Dorsum entirely green
      ab. **chlorizans** Dalla Torre (= *virescens* Mulsant)[39]
  E. Dorsum entirely black.................... ab. **diabolus** Dalla Torre[40]
  F. Dorsum brown; head and pronotum darker than the elytra; greasy-metallic.................................... **carniolicus** (Roubal)
II. Abdomen and legs red (only in females)
  A'. Dorsum blue-black.......................... ab. **rufipes** (Herbst)
  B'. Dorsum light blue........................ ab. **coerulea** Dalla Torre
  C'. Dorsum green............................ ab. **viridis** Dalla Torre[41]

Obviously Depoli's key omits or disregards all structural, mandibular and dimorphic characters, which the following four forms fairly well represent: *caucasicus* Parry (1864), *cribratus* Mulsant

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[35] Wiener Entom. Zeitung, XXXVI, p. 190, 1917.

[36] Deutsche Entom. Zeitschr., LXIII, p. 64, 1919.

[37] Wiener Entom. Zeitung, XXXVI, p. 190, 1917.

[38] This aberrant is apparently identical to *chalybaeus* MacLeay.

[39] These aberrants are reversed in the original. *Virescens* Mulsant is preoccupied by congeneric *virescens* (Fabricius), treated here as a distinct species.

[40] Depoli uses *diabolicus,* which is not correct.

[41] As will be noted, the aberrants *aeneus* Poll., *caprea* Degeer, *chalybaeus* MacLeay, *coerulescens* Udman, *cribratus* Mulsant and *nigripes* MacLeay are not tabulated.

(1863), *delagrangei* Fairmaire (1892) and *spinifer* Schaufuss (1862). *Caucasicus* and *spinifer* appear, on first view, to be distinct, but in long series they intergrade. Whether we should consider these forms distinct is a moot question; however, in deference to observations on analogous variations in the plastic lucanid group Odontolabini, so ably portrayed by Leuthner[42] in his monumental monograph, we safely can assume that they are only aberrational migrants or unstable forms, which we can expect to occur, occasionally, throughout the range of the species.

As its name implies, *cribratus* Mulsant is a cribrate form which Reitter,[43] and Barthe,[44] did not consider worthy even of a mention in their tabulations; my remarks anent the variant *cribripennis* Van Dyke (1928) of *marginalis* apply equally well to this aberrant.

Platycerus delagrangei Fairmaire. Ann. Soc. Ent. Belg., XXXVI, p. 145, 1892.

Original description: "Length 11 mm.—Oblong, subparallel, slightly convex, fusco-coeruleus, a little shining; with the head densely rugulose-punctate, the front a little concave, the clypeus quite strongly emarginate, supra-antennal tubercles smooth; prothorax evidently transverse, narrower in front than behind, sides somewhat broadly margined and very obtusely angulate just before the middle, posterior angles obtuse, dorsum densely rugulose-punctate with a narrow smooth median line; scutellum smooth, subtruncate; elytra angulate at humeri, lateral margins somewhat broad towards apices, dorsum densely and strongly punctate, finely striate, sutural margin elevated; beneath for the most part dusky, densely and strongly punctate; male more nearly parallel (than female), with longer mandibles but these (even so) shorter than the head."

"Quite distinct from *caraboides* by the more elongate, more parallel form, by the more somber, less brilliant coloration, by the thorax as well as the head densely and quite strongly punctured and by the much shorter mandibles; the anterior angles of the thorax are more obtuse. *P. caucasicus* Saund.[45] (Trans. Ent. Soc. Lond. 1864, p. 60) appears to differ by its greater size, its brilliant coloration, its punctuation less dense and its longer mandibles."[46]

Chief distinction to notice is the "more somber, less brilliant coloration" which applies precisely to *diabolus* Dalla Torre (1879), a form entirely black and, more or less, opaque.

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[42] Trans. Zool. Soc., London, XI, pp. 385–491, 14 pls., 1885.

[43] Verhandl. Nat. Verein, Brunn, XXX, p. 146, 1897.

[44] Miscellanea Entomologica, XII, p. 8, 1904.

[45] The protologist is Parry.

[46] For the description and its translation I am deeply indebted to Dr. Edward A. Chapin, U. S. National Museum.

Its omission by the foremost European coleopterist, Reitter, speaks for itself; the type is apparently in the collection of Maurice Pic, who refers to it curtly and its probable distinctness from *caraboides*.[47]

Platycerus caucasicus Parry; original diagnosis:

"P. coeruleus, nitidus; capite parcius punctato, antrorsum profunde emarginato, impresso; mandibulis elongatis, capitis fere longitudine, curvatis, supra sulcatis, extus prope basin angulatis, intus ad basin dente obtuso instructis; prothorace transverso, angulis anticis prominulis, deflexis, lateribus sinuatis, angulis posticis obtusis, parcius sat fortiter punctato; elytris elongatis, parallelis, punctatis, leviter lineatis; corpore subtus nigro; tibiis anticis minute denticulatis, quatuot posticis inermibus. Long. corp. (mandib. incl.) lin. 6½. Hab. in Caucaso. Coll. Mniszech et Parry."

"Readily distinguished from its European ally, *P. caraboides,* by its narrower and more convex form, its prominent and more slender mandibles, its impressed and sparsely punctate head, the sinuate lateral margins of the prothorax, the obtuse posterior angles and punctuation of that segment, and, finally, by its more parallel and sparsely punctate elytra, the interstices being smooth."

A rare form, of which only three examples were seen; one from the type locality, one from Vysoké Tatry (High Tatras), Slovakia, and another from Germany, without a definite locality. Boileau,[48] who reviewed the types of lucanid species conserved at the British and Oxford Museums, passed over the type without comment; the type is in the British Museum of Natural History, London.

Platycerus spinifer Schaufuss; original diagnosis:

"Viridiaeneus, nitidulus; thorace angulis posterioribus rectus; elytris irregulariter striato-punctatis, interstitiis ruguloso-punctatis; antennarum clava quadriarticulata; tibiis anticis in utroque sexu tri- vel quatuor-, posticis in medio uni-spinosis. ♂ Long. 14 mm., lat. 5 mm.; ♀ long. 9 mm., lat. 3½ mm."

"Von *Pl. caraboides* verschieden 1) durch tiefe Streifen der Flugeldecken und dichte, querrunzliche Punktur derselben, 2) durch gleiche Lange der vier Gliede der Fuhlerkeule, 3) durch drei bis vier grossere Dorne (zwischen den vielen kleinen) auf den Vorder und je einen Dorn auf der Mitte der vier hinteren Schienen in beiden Geschlechtern. Funf Exemplaren im Mai."

Translation: "Distinguished from *P. caraboides* through 1) deep striae of elytra and dense, crosswise wrinkled sculpture of same, 2) through equal length of the four segments of antennal clava, 3) through three to four larger spines (between numerous smaller) on the anterior and but one spine in middle of the four posterior tibiae in both sexes. Five examples in May."

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[47] Bull. Soc. Ent. France, pp. 399–400, 1911.

[48] Trans. Ent. Soc., London, pp. 213–272, 1 pl., 1913.

If the diagnosis is exact, then one of the generic characters, which Schaufuss (1916) gave, "four posterior tibiae unarmed" disappears or loses value. Examination of long series, however, discloses the fact that this character persists, thus being one of the best for the isolation of the genus in the tribe. Therefore we can consider *spinifer* as a good variety of *caraboides,* discarding the various color phases and sculptural aberrants as synonymous and treat them as such. Multiplication of names serves no useful purpose, tending to chaos instead of order; to what an extent this may be carried is well demonstrated by the common European stag-beetle, *Lucanus cervus* (L.), which bears at the present no less than 34 subspecific, varietal and aberrational names.

A male bearing identification label in Angell's handwriting *P. spinifer,* proved to be the color phase *diabolus* Dalla Torre, which, of course, does not disport the additional spination; it is black, feebly shining, with purplish luster, while *spinifer* is green, with aeneous sheen.

The foregoing revision is based on approximately 1200 examples, in our principal collections, chiefly those at the Academy of Natural Sciences of Philadelphia (ex-coll. Angell, Horn, Mason, etc.); United States National Museum, Washington, D. C.; American Museum of Natural History, New York; Museum of Comparative Zoölogy, Cambridge, Mass.; Carnegie Museum, Pittsburgh; Chicago Museum of Natural History (formerly Field Museum), and many other institutional and private collections, specifically mentioned in preface.

Number of specimens dissected for verification and illustration of sexual characters: 10 (7 ♂, 3 ♀). Measurements of *caraboides* (derived from material in the author's cabinet): ♂ 10.9–15.6 mm.; ♀ 9.7–12.9 mm.

Platycerus delicatulus Lewis (Pl. V, fig. 25 a to e.)

Platycerus delicatulus Lewis, Trans. Ent. Soc., London, p. 338, pl. 14, fig. 3 ♂, 1883. Miwa, Trans. Nat. Hist. Soc., Formosa, XXIII, p. 370, pl. 3, fig. 8 ♂, 1933. Miwa and Chûjo, Catalogus Coleopterorum Japonicorum, II, p. 9, 1936. Takeuchi, Monograph of Beetles of Iwate Prefecture, Tokyo, p. 109, pl. 1, fig. 10 ♀, 1940.

Original description: "♂. Nigro-coeruleus, subnitidus, capite thoraceque sat fortiter punctatis, mandibulis capitis longitudine. Antennis nigris. Elytris tenuiter striatis et rugoso-punctatissimis, pedibus testaceis, hic geniculis nigris.

Long. 6½ lines. ♀ Aeneus, seu nigro-coeruleus, tibiis plerumque solum testaceis. Long. 5½ lines. Twenty-five males; twenty females."

"Above blue-black, rather shining, rather parallel; beneath black. Head rather thickly and strongly punctured; clypeus smooth, excrescences in front of eyes prominent; mandibles black; when closed the basal teeth close on to the clypeus, and nearly touch each other. The upper part of each tooth forms a ridge, which extends along the mandible, forming a median carina. The punctuation of the thorax is rather finer than that of the head and in shape and dilatation at sides agrees with *P. quercus,* Weber; scutellum is smooth at the base; elytra sculptured in the usual form of the genus. The legs are testaceous; knee-joints and front tibiae black; tarsi pitchy."

"The female is more variable in colour, being brassy, brassy green, and blue-black, with the middle and hind tibiae only generally pale; but I have specimens with wholly red legs, and one with legs entirely black."

"*P. delicatulus* is of more slender form than *caraboides* and the elytra are somewhat more depressed in the front of the middle, with the apical callosities more prominent. The sculpture, too, is considerably finer, in the male the apical teeth of the front tibiae are but little developed, and the crenulations above them are remarkably regular, there being an absence of any tooth standing out from the rest in a prominent manner. The middle tibiae also are without external teeth. Found in June at Oyayama, Odaigahara, Chiuzenji; and on Ontake in August."[49]

The species is thus far represented by a single female example in the writer's cabinet, from which the drawings accompanying this verbatim description are replicas; it resembles or assimilates more to *oregonensis* than to *quercus,* as Lewis opines; basal angles of pronotum (compare figs. 5 and 25-d) are broadly rounded and not sinuous as in *oregonensis;* antennal clava compact, with ultimate segment more globose than in that species (compare figs. 6 and 17).

The genitalia (figs. 25-a, b) are unique among its congeners; the coxites are broad, flattened, truncate at apices, heavily sclerotized, and protected dorsad by the transparent plate mentioned under *caraboides,* which in this instance is more angulate (compare figs. 18-a and 25-a).

Measurements of female in millimeters

	Length	Width
Total length	11.5	
Head (mand. incl.)	1.5	2.0
Prothorax	2.3	3.8
Elytra	7.6	4.9

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[49] All localities are of Honshu Island, Japan.

The male is unknown to me in nature; it was figured by Lewis and Miwa; the characters used in the key are drawn from the original description and the figure by Miwa, which is especially good. An excellent photographic figure of a female taken on Mt. Iwate, another locality of Honshu, is reproduced in the Monograph by Takeuchi.[50] Types (♂♀) in the British Museum (Natural History).

Distribution.—Japan proper: Honshu, Kyushu.

Platycerus oregonensis Westwood (Pl. IV, figs. 2 to 11.)

Platycerus origonensis [sic] Westwood, Journ. of Proc. Ent. Soc. London, iv, p. 106, 1844.[51] Westwood, Ann. Mag. Nat. Hist., xvii, p. 59, 1846.

Platycerus coerulescens Leconte, Proc. Acad. Nat. Sci. Phila., p. 345, 1861. Parry, Trans. Ent. Soc. London, (3) ii, p. 60, 1864. Horn, Trans. Amer. Ent. Soc., v, p. 137, 1875. Van Dyke, Pan-Pacific Ent., iv, p. 108, 1928

Platycerus oregonensis Westwood, Trans Ent. Soc. London, (2), iv, p. 277, pl. 20, fig. 9♂, 1846. Parry, Trans. Ent. Soc. London, p. 63, 1870. Fuchs, Bull. Brooklyn Ent. Soc, v, p. 57, pl fig. 7♂, 1882 Wickham, Can. Ent, xxxi, p. 23, 1899. Heyne and Taschenberg, Exotischer Kafer in Wort und Bild, p. 56, 1908. Van Dyke, in Essig's Insects of western North America, p. 448, 1926; Pan-Pacific Ent., iv, p. 108, 1928.

Platycerus chalybaeus Casey, Ann. New York Acad. Sci., ix, p. 639, 1897.

Platycerus origonensis; original description: "Pl. chalybaeus elytris violascentibus, mandibulis capite parum longioribus, versus basin curvatis, dente supero alteroque interno versus apicem armatis, pronoti lateribus marginatis. Long. corp. lin. 6. Hab. Oregon." In Trans. Ent. Soc. London (2) iv, p. 277, the author continues the description as follows: "Habitat ad littora septentrionali-occidentalia Americae borealis (Oregon). In Mus. D. Guérin, Parisiis[52] Caput transversum, quadratum, nigrum, nitidum. Mandibulae capite parum longiores basi curvatae, intus setosae, dente parvo supero lateroque interno fere ad apicem instructae, apice extremo acuto et obliquo. Antennae articulo 7mo intus parum, latius, pone medium paullo dilatatum, disco punctato, et in medio lineâ tenui longitudinali notato, marginibusque lateralibus marginatis. Elytra oblonga, pronoto haud latiora, violacea, nitida, punctata, punctis nonnullis lineas irregulares formantibus, angulis humeralibus prominentibus. Pedes breves, nigri. Tibiae anticae extus serratae, dentibusque 6 majoribus et acutis armatae."

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[50] Monograph of Beetles of Iwate Prefecture, Tokio, 1940.

[51] Not seen by the writer.

[52] Apparently erroneous, as Reiche (Ann. Soc. Ent. France (3) i, p. 426, 1853) states: "Le *Platycerus origonensis* est de ma collection," and in footnote: "toutes les espèces . . . indiquées de la mienne, sont actuellement la propriété de M. le marquis de la Ferté-Sénectère."

Platycerus coerulescens; original description: "Niger, capite thoraceque parce grosse punctatis, hoc transverso lateribus antice rectis paulo convergentibus, pone medium inflexis, angulis posticis obtusis haud rotundatis, elytris nigro-cyaneis, punctis striatim digestis, interstitiis irregulariter sub seriatim punctatis; mandibulis surcum incurvatis, dente inferno pone apicem, alteroque superno armatis. Long. (mand. incl.) .48. Tejon and Vallecitas, Cal."

Type no. 3690, in Museum of Comparative Zöology, Cambridge, Massachusetts.

Platycerus chalybaeus; original description: "Subparallel, strongly convex, glabrous, black, the legs and abdomen piceous, the elytra with a dark steel-blue lustre; integuments but slightly alutaceous. *Head* scarcely ⅔ as wide as the prothorax, transverse, sparsely but distinctly punctured, the eyes moderate; front broadly concave; mandibles small, arcuate, setose internally, with a large quadrate tooth within at base, the apex almost equally trilobed, the upper lobe most acute. *Antennae* moderate, the club 4-jointed, twice as long as the funicle; joints two to five of the latter gradually and slightly increasing in width, the latter ⅗ as wide as the first joint of the club, which is three times as wide as long and scarcely ½ as long and ¾ as wide as the second; last three joints much more densely pubescent, subequal in width, nearly as in *oregonensis*. *Prothorax* ⅔ wider than long, widest and subangularly rounded at the sides at basal third, the sides thence convergent and sinuate to the basal angles, which are right, only slightly blunt, prominent and slightly everted; sides less convergent and nearly straight in apical ⅔; apex broadly and bisinuately emarginate, the apical angles slightly prominent anteriorly; disk feebly impressed along the middle, sparsely, somewhat unevenly and not very strongly punctate. Scutellum punctured slightly at base. *Elytra* ½ longer than wide, nearly three times as long as the prothorax and perceptibly wider; intra-humeral impression small but distinct; punctures disposed nearly as in *oregonensis*. *Legs* moderate in length, rather slender, the hind tarsi but little shorter than the tibiae. Length ♂ 8.3–9.5 mm., ♀ 10.3 mm.; width ♂ 2.8–3.5, ♀ 4.1 mm. California."

Platycerus oregonensis seems to be the only species in the genus[58] with unvarying or constant mandibles, longer than the head and tubular in cross section, basad with a robust obtuse tooth in large males, bifid in smaller individuals, gently curved from base to apex, upward bent from the middle, with a forward-directed dorsal tooth in apical fourth, apex acute; inner apical fourth laminate, forming a palmate expansion, which is either straight or obsoletely denticulate. Head transverse-quadrate, convex, broadest behind the eyes; pronotum nearly square, slightly broader than long, broadest in posterior fourth, front margin sinuous, anterior angles produced and rounded, sides parallel, margin obsoletely explanate (small ♂♂), broadly dilated in anterior third (fig. 11) in large males, posterior fourth obtusely rounded and slightly emarginate to basal angle, obtuse in small males (similar to female, fig. 5), or acute in males of maximum development (fig. 11), base of pronotum with a longitudinal median impression obliterated on the vertex; scutellum broader than long, ogival, impunctate; elytra nearly parallel, humeri not mucronate, twice as long as broad, broadest in posterior third, thence regularly rounded to apex, lineato-punctate, interstices flat. Head and pronotum sparsely punctured, black, subshining, elytra with strong blue luster.

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[58] *P. delicatulus* Lewis is not considered, as available data are too meager for its inclusion.

P. coerulescens Leconte and *P. chalybaeus* Casey are based on examples of minor developments, proved on rigid examination of the types to be identical. They deviate from typical individuals by the form of their mandibles, which are more porrect and arcuate, and have slightly closer and stronger postocular puncturation.

A local and obvious geographical race, occurs along the coastal belt of Oregon; it differs from the typical form in color, which is black throughout, with green luster and pronounced finer, closer sculpture laterad of disc of male; the female being entirely black, with or without a green sheen, in latter case more polished and shining, pronotum more convex, with clearly defined cribriform puncturation and without the basal longitudinal median impression on pronotum, present in typical *oregonensis*.[54]

The larva here figured (fig. 2) is the fortunate find of Mrs. D. M. Fender, McMinnville, Oregon, who states in a letter to me that the larva was taken in rotting log of maple (*Acer macrophylum*); besides the host plant here recorded, the larvae were observed by Rivers [55] and Van Dyke [56] to subsist on California holly (*Photinia arbutifolia*), madrone (*Umbellularia Californica*), live oak (*Quercus agrifolia*), blue gum (*Eucalyptus globulus*), and Barrett [57] records it from red alder.

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[54] A small female, Acc. No. 3938, Benesh Collection, received from J. W. Angell, Feb. 11, 1937, with his determination *P. peregrinus*, proves to be a representative of this aberrant form.

[55] Bull. Calif. Acad. Sci., II, pp. 64–72, 1886.

[56] Essig's Insects of western North America, p. 448, 1926.

[57] Pan-Pacific Ent., VIII, p. 172, 1932.

The characters and observations on *P. oregonensis* are derived from approximately 450 individuals, of which number, fifteen were dissected (7 ♂, 8 ♀) for genitalic studies; their measurements in length vary (retained material in the Benesh collection) from 11.2 to 15.4 mm., ♂; 9.6 to 13.9 mm., ♀.

Distribution.—Recorded from British Columbia to California. Precise localities:

BRITISH COLUMBIA: Massett, Queen Charlotte Isl., VI, 25, VII, 5, 1925 (Jack Martin); Vancouver, III, 14, 1929 (H. B. Leech). CALIFORNIA: Alameda County; Berkeley, X, 12, 1931; Branscomb, VII, 20, 1941 (J. Helfer); Crow Canyon, Alameda Co., II, 19, 1939 (W. T. Barr); Leone Heights, Alameda Co., IV, 10, 1908; Mendocino Co., V, 10, 1919; X, 25, 1923 (E. R. Leach); Mills College, IV, 4, 1908; Muir Woods, Marin Co., IV, 23, 1911; Yosemite Valley, VI, 3, 1921. OREGON: Alsea Mt., V, 18, 1928 (C. H. Starker); Alsea River, 20 m. E. Waldport, VI, 20, 1936 (J. Schuh); Baker Creek, V, 10, 1936; Blue Mts., Tollgate Road, V, 28, 1936 (M. C. Lane); Breitenbush, IX, 10, 1914; Corvallis, IV, 11, 1914 (W. J. Chamberlin); IV, 14, 1933, V, 5, 1935 (J. Turema); Gearhart, VI, 28–30, 1933 (M. C. Lane); Josephine Co., V, 7, 1938 (F. M. Beer); Mary's Peak; Murphy Co., V, 7, 1938 (F. M. Beer); Taft, V, 4, 1935 (R. E. Rieder). WASHINGTON: Bothell, V, 12, 1936 (C. F. Shockey); Cedar Mts., King Co., IV, 19, 1935; Graylands, XII, 16, 1930 (W. W. Baker); King Co., Green River Gorge, V, 10, 1927 (T. Kincaid); Manchester, IV, 14, 1934; North Skokomish River, VI, 1932, Elev. 700′ (J. E. Schwartz); Olympia, IV, 27, 1895; Puyallup, IV, 17, 1930, cherry wood (W. W. Baker); Renton, Cedar Grove, IV, 19, 1935 (J. W. Wilson); Seattle, IV, 13, 1914; IV, 30, 1914; IV, 28, 1935 (C. J. Burner); IV, 28, 1936 (U. W. campus); IV, 1938 (D. Stool); Westport, IV, 22, 1936 (W. W. Baker); W. T. (? Washington Territory).

Platycerus virescens (Fabricius) (Pl. V, figs. 19 to 24.)

Lucanus virescens Fabricius, Systema Entomologicae, p. 817, 1775; Species Insectorum, p. 3, 1781; Mantissa Ins., p. 2, 1787.[58] [The forma maxima.]

Lucanus quercus Weber, Observationes Entomologicae, p. 85, 1801. [The forma minor.]

Platycerus quercus Schonherr, Syn. Ins., (1), III, p. 331, 1817. Castelnau, Hist. Nat. Ins., Coleop., II, p. 173, 1840. Burmeister, Hand. d. Ent., V, p. 406, 1847. Fuchs, Bull. Brooklyn Ent. Soc., V, p. 57, pl. fig. 6 ♂, 1882. Heyne and Taschenberg, Exot. Käfer in Wort u. Bild, p. 56, 1908. Blatchley, Coleop. Indiana, p. 907, fig. ♂, 1910. Van Dyke, Pan-Pacific Ent., IV, pp. 105, 108, 1928.

Lucanus securidens Say, Jour. Acad. Nat. Sci., Phila., III, p. 249, 1823. [The forma intermedia.]

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[58] Omitted by Fabricius in Ent. Syst., 1792 and Syst. Eleuth., 1801.

Platycerus scaritoides Sturm, Cat. d. Kaefer-Sammlung, p. 136, 1843.
Platycerus quercicola Knoch (ined.), Gemminger and Harold, Cat. Coleop., III, p. 961, 1868.
Platycerus angustus Casey, Canadian Entomologist, XLI, p. 280, 1908.
Platycerus iowanus Casey, Can. Ent., XLI, p. 280, 1908.
Platycerus peregrinus Casey, Can. Ent., XLI, p. 280, 1908.

Lucanus virescens; original description: "Lucanus viridiaeneus, maxillis tridentatis. Habitat in America. Drury. Triplo major *L. caraboidi,* maxillis exsertis, capito breviores, tridentatae. Caput virescens, canaliculatum. Thorax et elytra viridi, obscure nitidi, laevia, glabra. Corpus subtus obscuris."

Lucanus securidens; original description: "Mandibles at tip securiform, and about six-toothed; elytra striate. Inhabits the United States. *Lucanus platycerus,* Melsh. Catal. Body blackish or dark reddish-brown, tinged with brassy, punctured; mandibles as long as the head; inner side with a robust emarginate tooth at base; an unarmed interval in the middle, and a dilated somewhat securiform tip, armed with about six small teeth; anterior edge with a rounded lobe at base, and elevated angle near the tip: thorax margined, not distinctly sinuous before the posterior angles: elytra punctured; striae almost obsolete and punctured; anterior tibia with more than ten inequal very acute teeth. Length two-fifths of an inch."

Lucanus quercus; original description: "Lucanus aeneopiceus, mandibulis brevissimis antennarum articulis tribus ultimis perfoliatis. Ex America septentrionali. Misit Droegius sub hoc nomine. Statuta *L. caraboidi,* au duplo fere minor. Caput aeneum punctatum thorace angustius, antennis obscure testaceis, articulis tribus ultimis perfoliatis. Thorax marginatus aeneus punctatus. Elytra marginata piceoaenea punctata substriata. Pedes picei femoribus anticis macula pilosa aurea abdomen piceum margine anoque ferrugineis."

The above synonymy is based on the variation observed in a lot of approximately 150 individuals, taken one day in June, 1930, in a well-decomposed maple log along the Des Plaines River, between Libertyville and Rosecrans, Lake County, Illinois.

No doubt exists that the lot represents but one species, the common and well known, so-called *quercus*· closer examination readily discerns that the series contains three distinct mandibular developments and numerous connecting or transitional forms, which, to some extent, are paralleled by similar variations in the Odontolabini. The commonest, smallest form (fig. 21-d), is comparable to the forma *prionodonta;* the intermediate form (fig. 21-c), with the edentate median section, comes nearest to the forma *amphiodonta,* whilst the largest development (fig. 21-a, b), with slender middle section and reduced number of subapical teeth, becomes the telodont form of Leuthner, or constant phase of Arrow.[59] The last form seems to be much rarer, as it was represented by but four examples amongst a series of 95 males; one may well inquire: what forces are at work in Lucanidae to produce these gigantic mandibles? It surely can not be said that the smaller specimens, with proportionally reduced mandibles, were denied sufficient food and starvation is responsible for this condition, as all specimens enjoyed the same advantage of sustenance, existing in ideal environment with abundance of air, temperature and humidity; however, as this is beyond the scope of this essay, we leave the solving thereof to the physiologists.

During the identification, it was early discerned that this manifold insect is the recipient of several names; the first name proposed for the insect can be traced to Fabricius (1775), who described the largest development "maxillis exsertis, capito breviores, tridentatae," and a close variant (fig. 21-b) thereof was subsequently christened by Casey[60] *peregrinus*. Thomas Say[61] described the intermediate form (fig. 21-c), while Weber[62] appended the name *quercus* to the commonest form (fig. 21-d). Hence, in accordance with accepted rules of priority, the Fabrician name *virescens* is here retained and the Weberian *quercus* reduced to synonymy.

The status and synonymy of *P. peregrinus* Casey appears to be somewhat muddled; it has recently been assigned, by Van Dyke,[63] to an entirely different species, *P. agassizi* (Lec.), to the confusion of other systematists. How Dr. Van Dyke arrived at the conclusion is beyond understanding; in the diagnosis the species used for comparison is *quercus,* and no other, with which *peregrinus* could be associated. The subjoined original description by Casey[64] is self-explanatory.

Platycerus peregrinus; original description: "Larger and rather stouter than *quercus* moderately shining, black above and beneath, the elytra somewhat aenescent; head strongly, unevenly and, on the whole, not very closely punctate, the fully-developed mandibles longer, less bent and less prominent basally than in *quercus,* the antennae nearly similar, though with the joints less oblique; prothorax two-thirds wider than long, the sides converging and perfectly straight from the obtuse angulation at basal third to apex, converging basally, the angles obtuse and blunt; surface punctured as in *quercus,* the side margins very narrowly reflexed; elytra nearly as in *quercus,* except that the punctures are coarser, more rounded and less lineiform. Length, ♂, 11.2 mm.; width, 3.8 mm. Oregon."

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[59] Trans. Roy. Ent. Soc., London, LXXXVI, pp. 239–244, 1937.
[60] Canadian Entom., XLI, p. 280, 1908.
[61] Journ. Acad. Nat. Sci. Phila., III, p. 249, 1823.
[62] Observationes Entomologicae, Kiliae, p. 85, 1801.
[63] Pan-Pacific Ent., IV, p. 108, 1928.
[64] Canadian Entom., XLI, p. 280, 1908.

The only confusing factor is the locality, Oregon; perhaps this is responsible for Van Dyke's straying. Dr. Chapin (in correspondence Feb. 8, 1932) mentions that *P. peregrinus* Casey, suppressed by Van Dyke as a synonym of *P. pacificus* Csy., has a four segmented antennal club of the type of *P. quercus* Web. and should stand either as a full species or as a subspecies of *quercus.* On the other hand, Dr. G. J. Arrow of the British Museum (Natural History), to whom an example of *peregrinus* was sent in exchange, could not see any difference to separate it from *quercus.*

To fully cover the synonymy of *virescens* we must yet include two additional "subspecies" described by Casey[65] in the following manner:

Platycerus angustus; original description: "Still narrower and rather more depressed than *quercus,* the head more coarsely and closely cribrate; prothorax one-half wider than long, the sides parallel, arcuately rounding near the apex and somewhat abruptly converging in about basal third, the basal angles obtuse and narrowly rounded; surface punctured as in *quercus,* but with the side margins twice as broadly reflexed, this being a very conspicuous character; elytra still more coarsely punctured than in *quercus* and more obscurely striate. Length, ♂, 8.7 mm.; width, 2.75 mm."

Platycerus iowanus; original description: "Nearly similar to *quercus* but smaller, more abbreviated and of a deeper and more polished, more greenish-black colour; mandibles, when fully developed, shorter, more prominent externally near the base and with a deeper external sinus, the head more coarsely and densely cribrate; prothorax nearly as in *quercus* but more transverse, being three-fourths wider than long and more densely, somewhat more coarsely punctate; elytra shorter, not more than one-half longer than wide, coarsely, deeply and closely punctate, and with impressed striae more or less lost externally; the female differs from the male in the same general direction as in *quercus,* but the colour is deep greenish black, and not paler and more aeneous, though the legs and abdomen are pale rufous, a character wholly wanting in the male; the elytra are relatively more elongate and the prothorax shorter than in the female of *quercus.*"

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[65] Canadian Entom., XLI, p. 280, 1908.

The diagnoses of the preceding two aberrants are hard to understand, and I concur with Dr. Van Dyke[66] in his contention that the so-called varieties *angustus* Casey and *iowanus* Casey are so poorly defined that they are not worthy of recognition. It will not be amiss to record some notes made by Dr. Chapin, in relation to the lot of *virescens* taken near Libertyville, and other material sent to him for comparison with Casey's types under his charge at the United States National Museum. He noted that the type of *quercus angustus* is deformed and so no direct comparison with any of my specimens can be made. However, the second paratype (third specimen) in Casey's series is nearly identical in form with his first (typical) specimen of *quercus*. My specimen from Riley Co[unty], Kansas, that Dr. Chapin set apart with his determination label agrees very well with *quercus* in both size and form and in punctuation. It agrees in punctuation with the type of *q. angustus* but is a trifle larger. It agrees in size and so far as possible in form with the third specimen of *q. angustus*.

Of *quercus iowanus* he could see no character to separate type specimen of *q. iowanus* from the second specimen of *quercus* in Casey's series. Further, the fourth specimen in Casey's series of *quercus* is a female and apparently identical in color with the female of *iowanus*. He found that my Lake County, Illinois, specimen of *peregrinus* is a good match; and my Whitewood, South Dakota specimen of *depressus* is also a good match, while my Wallace, Idaho, specimen of *marginalis* seems to be typical.

The adults are reported by Blatchley[67] to occur "beneath bark and logs, especially those of oak"; Riley[68] mentions them as a nuisance on buds of pears. The larvae and adults were observed by the writer in a rotten maple log.

Disposition of the types is unknown, but *virescens* (Fabricius) may be in the Fabrician collection, University of Kiel, Germany, where also *quercus* (Weber) may be preserved; *securidens* (Say) could not be located in the Harris collection, supposed to contain some of Say's types, now in the Museum of Comparative Zoölogy, Cambridge, Massachusetts. Measurements of the species (from material in the Benesh collection): ♂♂ 8.8 to 12.0 mm.; ♀♀ 8.7

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[66] Pan-Pacific Ent., IV, p. 108, 1928.
[67] Coleop. Indiana, p. 907, 1910.
[68] Amer. Entom. & Bot., II, p 212, 1870.

to 10.5 mm. Figures 21-a, c and d are more or less composite free hand drawings to illustrate the gradual evolution of the male mandible in *virescens;* figure *a* represents a large male in the Beaulne collection, Montreal, Canada, labelled by Beaulne, *P. depressus;* figure *b* (camera lucida reproduction) represents the male which Dr. Chapin had pronounced a good match of *peregrinus*, now at the Academy of Natural Sciences of Philadelphia. Large series, approximately 1800 specimens, were used in this study, from collections mentioned in the preface, plus the material contained in the collections of Agricultural and Mechanical College, Stillwater, Oklahoma and Kansas State Agricultural College, Manhattan, Kansas.

Distribution.—Throughout eastern Canada (New Brunswick, Ontario, Quebec), and the United States, east of Rocky Mountains. Precise localities (from which specimens were examined and here recorded):

Alabama: Etowah, VI, 1911, (H. P. Loding), [Löding]; Fort Wayne, DeKalb Co., VII, 1937, (H. P. Löding), [Loding]; Mobile, II, 6, 1926, (H. P. Löding), [Löding]; Tumblin Gap, VI, 3–8, 1911, (H. P. Löding), [Löding]. Arkansas: Washington Co., X, 22, 1938, flying, [A. & M. College, Stillwater, Okla.]; Washington Co., IV, 22, 1939, [A. & M. College, Stillwater, Okla.]. Colorado: Col., (J. C. Warren), [F. Psota]; Twin Lake, VII, 16, 1935, (Dybas & Seevers), [Dybas & Seevers]. Florida: Key West, (L. W. Brownell), [J. W. Angell]. Illinois: Algonquin, (Nason), [Ill. Nat. Hist. Surv.]; Anna, IV, 26, 1882, [Ill. Nat. Hist. Surv.]; Chicago, V, 22, (E. Liljeblad), [Chicago Mus.]; Bloomington, V, 18, 1895, (Wolcott), [Ill. Nat. Hist. Surv.]; Chicago, VI, 11, 1924, (C. Selinger), [Chicago Mus.]; Danville, 1908; [Ill. Nat. Hist. Surv.]; Dubois, Creek Valley, IV, 24, 1914, [Ill. Nat. Hist. Surv.]; East Peoria, XI, 24, 1942, (H. H. Ross), [Ill. Nat. Hist. Surv.]; Edgebrook, VI, 1, 1913; Havana, Devil's Hole, V, 10, 1931, (T. H. Frison), [Ill. Nat. Hist. Surv.]; Hodoon, VI, 8, 1882, [Ill. Nat. Hist. Surv.]; Homer, IV, 24, 1909, [Ill. Nat. Hist. Surv.]; Kings Mills, V, 18, 1882, [Ill. Nat. Hist. Surv.]; Libertyville, VI, 7, 1930, (B. Benesh), [B. Benesh]; Muncie, V, 1, 1927, (T. H. Frison), [Ill. Nat. Hist. Surv.]; Northern Illinois, V, [Ill. Nat. Hist. Surv.]; Oakwood, IV, 25, 1926, (F. K. Auden), [Ill. Nat. Hist. Surv.]; Oakwood, X, 25, 1941, (Ross & Burks), [Ill. Nat. Hist. Surv.]; Olive Branch, V, 10, 1907, [Ill. Nat. Hist. Surv.]; Ozark, Johnston Co., V, 26, 1928, (B. Benesh), [B. Benesh]; Urbana, Augerville Woods, IV, 21, 1920, [Ill. Nat. Hist. Surv.]. Indiana: Dune Park, VI, 1, 1935, (Dybas & Seevers), [Dybas & Seevers]; Ogden Dunes, X, 27, 1933, (Dybas & Seevers), [Dybas & Seevers]. Iowa: Fort Dodge, [J. W.

Angell]; Iowa City, [J. W. Angell]. KANSAS: Baldwin; Auburn, X, 6; Lecompton, X, 10, 1933; Maple Hill, X, 20, 1933. MAINE: Monmouth, VI, 23, 1910, (C. A. Frost), [J. W. Angell]; Norway, (S. I. Smith), [J. W. Angell]. MASSASCHUSETTS: Blue Hill, VI, 16, 1899; Chestnut Hill, Boston, V, 9, 1901; Dover, [J. W. Angell]; Forest Hills, VII, 16, (A. M. Wilcox); Lunenburg; Mass., (J. C. Warren), [F. Psota]; Mt. Washington, VII. MICHIGAN: Allegan; Ann Arbor, VI, 9, 1901; Agriculture College, V, 18, 1899; Berrien Co., Warren Woods, VI, 19, 1920, (M. H. Hatch), [M. H. Hatch]; Cheboygan Co., VII, 19, 1935, (M. Sanderson), [J. W. Angell]; Grand Ledge, [J. W. Angell]; Lakeside, V, 21, 1932, V, 25, 1935; Marquette; Midland Co., VI, 5, 1937, (R. R. Dreisbach), [J. W. Angell]; Oakland Co., VI, 14, 1905, (A. W. Andrews), VI, 20, 1921, (A. W. Andrews), [A. W. Andrews]; Washtenaw Co., V, 10, 1939. MINNESOTA: Anoka Co., V, 8, 1937, (R. Dutoit), [Univ. Minn.]; Anoka Co., V, 12, 1940, (D. Murray), [Univ. Minn.]; Afton, V, 9, 1936, (D. Murray), [Univ. Minn.]; Bloomington, IV, 20, 1899, (E. B. Forbes); Coon Creek, IV, 21, 1934, (C. Y. Liu), [Univ. Minn.]; Dakota Co., IV, 23, 1936, (R. Anderson), [Univ. Minn.]; Mille Lacs Co., VI, 2, 1937, (R. H. Handford), [Univ. Minn.]; Mille Lacs Lake, near Garrison, V, 24, 1941, (J. E. Hughes); Winona Co., (C. E. Pedersen), [Univ. Minn.]. MISSOURI: Osage Hills, V, 26, 1929, (A. F. Satterthwait), [A. F. Satterthwait]; St. Louis, (J. C. Warren), [F. Psota]; Willard, V, 19, 1908, (F. R. Mason). NEW HAMPSHIRE: Durham, VI, 6, 1907, [J. W. Angell]; Durham, V, 19, 1908, [J. W. Angell]; Glen House, White Mts., VI, 9, 1921, (F. R. Mason), [J. W. Angell]. NEW JERSEY: Englewood Cliffs, IV, 26, 1942, [J. W. Angell]; Newfoundland, [J. W. Angell]; Palisades, V, 10, 1914, (R. C. Osburn), [J. W. Angell]; Palmyra, III, 8, [J. W. Angell]. NEW YORK: Buffalo, [Nason Coll.]; Gainesville, VI, 2, 1933, [J. W. Angell]; Heartlake, Essex Co., VI, 25, 1941, (H. Dietrich), [Cornell Univ.]; Onondaga, IV, 28, 1923; Staten Is., (G. Wells). NORTH CAROLINA: Black Mts., VI, 18, 1912, (W. Beutenmuller), [J. W. Angell]; Blantyre, early May, 1908, (F. Sherman); Chapel Hill, II–III, 1935, (J. M. Valentine); Raleigh, early May, 1909, (Z. P. Metcalf); Raleigh, IV, 28, 1940, (R. Barnes); Sunburst, Haywood Co., V, 1912, 3000–3500′, (F. Sherman). OHIO: Columbus, V, 11, 1902, X, 30, 1932, X, 10, 1933, (P. E. Schaeffer), [Ohio State Univ.]; Delaware Co., V, 19, 1943, (D. J. & J. N. Knull), [Ohio State Univ.]; Franklin Co., VIII, 22, 1935, (R. T. Everly), [Ohio State Univ.]; Hocking Co., V, 10, (W. M. Barrow), [Ohio State Univ.]; Jefferson, Ashtabula Co., (R. J. Sim), [Ohio State Univ.]. OKLAHOMA: Rich Mts., IV, 15, 1935, [J. W. Angell]. PENNSYLVANIA: Allegheny, [J. W. Angell]; Angora, [J. W. Angell]; Bowmansdale, V, 3, 1917, (J. N. Knull), [Ohio State Univ.]; Camphill, XI, 5, 1910, (H. B. Kirk); Chester, [J. W. Angell]; Fernwood, VII, [J. W. Angell]; Greentown, V, 6, 1916, (D. Quirsfeld), [J. W. Angell]; Penna., [Bischoff Coll.]; Pittsburgh, (Ehrmann); Rockville, XI, 11, 1913, (H. B. Kirk), V, 16, 1917, (J. N. Knull), [Ohio State Univ.]; Sullivan Co., VI, 3, 1933, (J. N. Knull), [Ohio State Univ.]. SOUTH

CAROLINA:[69] Clemson College, III, 13, 1927, (G. E. Hudson), IV, 20, 1927, (D. Dunavan), VIII, 19, 1933, X, 14, 1933, (O. L. Cartwright), IV, 27, 1931, (J. G. Watts), IV, 22, 1935, (J. N. Todd); Easely, IV, 22, 1937, (R. L. Perry); Oconee Co., CCC Camp F2, IV, 21, 1936, (O. L. Cartwright); Salem, IV, 7, 1928, (F. Sherman); Tunnel, Valhalla, IV, 17, 1932, (O. L. Cartwright). TENNESSEE: Cates, V, 11, 1941, under bark, (Hoogstraal), [J. W. Angell]; Deer Lodge, Morgan Co., VII, 11, 1932, (B. Benesh), [B. Benesh]; Sweetwater, X, 1, 1922, (F. R. Mason), [J. W. Angell]. TEXAS: Fedor, Lee Co., V, [J. W. Angell]. WISCONSIN: Bayfield Co., [Hiestand]; Dane Co., [Hiestand]; Wis., [E. Chope Coll.]. CANADA: Belleville, Ontario, [J. W. Angell]; Digby, Nova Scotia, V, 15, 1908, [J. W. Angell]; Neck Road, Digby, Nova Scotia, V, 21, 1908, [J. W. Angell]; Pelee Is., VIII, 27, 1930, [J. W. Angell]; Ridgeway, Ontario, [J. W. Angell]; Toronto, Ontario, IV, 11, 1894, (R. J. Crew), [J. W. Angell].[70]

Platycerus piceus (Kirby) (Pl VI, figs. 27-a, 29, 31, 34, 38, 39.)

Lucanus piceus Kirby, in: Richardson's Fauna Boreali Americana, IV, p. 141, 1837, ♀.

Platycerus depressus Leconte, in: Agassiz, Lake Superior, p. 224, 1850, ♂.

Lucanus piceus; original description.[71] "Length of body 6 lines. A single specimen taken in the Journey from New York to Cumberland House. Body dark piceous, rather glossy, thickly punctured, nose very retuse, or rather with a large sinus; mandibles shorter than the head, acute, armed on their inner side with a stout tooth, with the segment of a circle taken out; antennae pale chestnut; prothorax with the lateral margin obtusangular, subcrenate and reflexed; disk longitudinally impunctured, and obsoletely channelled, scutellum channelled, impunctured; cubit serrulate and denticulate, two sharp teeth longer than the rest at the apex, tarsi chestnut."

"This is the smallest species of the stag-beetle tribe. As Schonherr has not placed it under the *Platycerus* but under *Lucanus* and as the insect here described is a true *Platycerus*, it should seem that he either did not know *L. piceus* or that I am mistaken in my reference. My specimen agrees with the short description in Systema Eleutheratorum but I have no opportunity of consulting Weber."

Leconte (1850): "Depressus, niger vix aeneus, thorace lateribus pone medium angulato, angulis posticis obtusis minime rotundatis, elytris profundius punctatis, striatisque. Long. .62"." "Twice the size of *P. quercus*, the elytral striae are alternately a little approximated; the mandibles of the

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[69] South Carolina distribution data through the kindness of Dr. Franklin Sherman, Clemson College, to whom thanks are due for generous coöperation in the past.

[70] Van Dyke records the species east of Mississippi River; present records extend this range throughout the Mississippi River watershed to the Rocky Mountains (Colorado).

[71] Original not seen; for the copy of this description the writer is indebted to Mr. J. W. Angell, New York.

♂ are much dilated at apex, but less curved than in *P. quercus*. A very small specimen has the angle emarginate, so that the basal angles become prominent and scarcely obtuse."

Type No. 3691 in Museum of Comparative Zoölogy, Cambridge, Massachusetts.

The size given by Leconte is misleading, as *depressus*, here suppressed, is never "twice the size of *P. quercus*," the measurements of material examined averaging 10.4 to 12.9 mm. ♂, 11.8 to 12.4 mm. ♀; we have yet to discover an insect as large as Leconte described.

Although Kirby does not give the sex of *piceus*, Dr. Arrow of the British Museum (Natural History) informs me that the type is a female. Apparently the Fauna Boreali Americana was not readily accessible to European workers, as both Burmeister [72] and Lacordaire,[73] do not mention the species in their works. The first reference that I can locate, subsequent to its description, is Parry,[74] who records it with some doubt under both species of *Platycerus* (*depressus* and *quercus* (= *virescens* (F.)) endemic to eastern North America. Next reference to *piceus* is by Fuchs,[75] who positively assigns it as a synonym of *depressus*, disregarding the fact that Kirby's species had several years of priority.

Due to established precedence, and to rectify this long standing error, I am compelled to suppress *depressus* Lec. as synonymous with *piceus*, and designate here *piceus* (Kirby), ♀, British Museum (Natural History), the lectotype of the species, and *depressus* Lec., ♂, type No. 3691, Museum of Comparative Zoölogy, the allotype.

As mentioned under *P. caraboides*, examples of maximum development possess proportionally larger mandibles, with subsequent enlargement of the head and a corresponding increase in size of the prothorax, sometimes to such an extent that they could be considered as representatives of another species. The anomaly is well portrayed by figures 22-a, b, where figure *a* shows the pronotum of a small male, closely resembling the female (fig. 22-c) and figure *b* the large male of maximum size; in small males the basal angle is acuminate and anterior angle less prominent, while the larger form (fig. 22-b) has the anterior angle produced, lateral sides nearly parallel, posterad emarginate, and basal angles obtuse.

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[72] Handbuch der Entomologie, v, p. 406, 1847.

[73] Hist. Nat. Ins., Genera des Col., III, p. 32, 1856.

[74] Trans. Ent. Soc., London, (3) II, p. 93, 1864.

[75] Bull. Brooklyn Ent. Soc., v, 58, 1882.

Approximately 200 specimens were examined, and eight dissected (5 ♂, 3 ♀).

Distribution.—Ranges from New England states to Maryland, west to Idaho, and north to Hudson Bay; precise localities:

COLORADO: Conejos Co., 7800′, VII, 3, 1937, (C. R. Rogers), [J. W. Angell]; North Fork, VII, 15, 1911, ♂ ♀ in copula, (J. H. Dawson), [J. W. Angell]; Ouray, 7500–8000′, VII, 1–15, 1917, (H. F. Wickham), [J. W. Angell]; Snow, [Kansas Univ. Coll'n]; Ute Creek, 9000′, VII, 6, (R. W. Dawson), [J. W. Angell]. IDAHO: Newman Lake, V, 16, 1925, (A. L. Melander), [J. W. Angell]. ILLINOIS: N. Ill., [Ill. Nat. Hist. Surv.]. MARYLAND: Md., [Otto Lugger coll'n]. MAINE: Beehive Mts., VIII, 13, (Sanford); Maine, VI, 28, 1907, [J. W. Angell]; Mt. Desert, VI, 19, 1934, (A. E. Brower), [J. W. Angell]; Paris, VII, 9, 1915, (C. A. Frost), [J. W. Angell]; Rockland, VII, 1893, [J. W. Angell]; Wales, VI, 12, 1909, (C. A. Frost), [J. W. Angell]. MASSACHUSETTS: Petersham, VI, 27, 1941, (R. C. Osburn), [J. W. Angell]. MICHIGAN: Douglas Lake, VI, 30, 1926, (C. H. Martin), [J. W. Angell]; Houghton Co., MacLain State Park, VI, 5, (M. H. Hatch), [M. H. Hatch]; Huron Co., VI, 25, 1910, (A. W. Andrews), [A. W. Andrews]; Kent Co., VII, 17, 1934, [M. H. Hatch]; Keweenaw Co., Five Mile Point, VII, 3, 1936, (M. H. Hatch), [M. H. Hatch]; Keweenaw Co., Tamarack Water Wks., VII, 2, 1936, (M. H. Hatch), [M. H. Hatch]; Midland Co., VI, 19, 1930, (R. R. Dreisbach), [J. W. Angell]; Wayne Co., 1895, [Field Museum coll'n]. MINNESOTA: Duluth, [J. W. Angell]; Lake Superior, [J. W. Angell]; Lake Itasca, VI, 1, 1922, (S. A. Graham), [Univ. Minn.]; La Salle Valley, V, 30, 1935, (D. D. Duming), [Univ. Minn.]; Otter Co., [Univ. Minn.]; Ottetail Co., [Univ. Minn.]; Plummer Co., VI, 3, 1935, (D. D. Duming), [Univ. Minn.]; Pope Co., VII, 2, 1939, (C. E. Petersen), [Univ. Minn.]. MONTANA: Gallatin Co., VI, 17, 1917, [J. W. Angell]; Highwood Mts., V, 30, 1930, (F. Lawrence), [J. W. Angell]. NEW HAMPSHIRE: Gobham, (Cab. Clermont), [J. W. Angell]; New Hampshire, (Ex-Musaeo James Thomson), [J. W. Angell]. NEW YORK: Axton, Adiron Mts., VI, 12–22, 1901, [J. W. Angell]; Buffalo, [J. W. Angell]; Heart Lake, Essex Co., VI, 18, 1941, (H. Dietrich), [Cornell Univ.]; Keene Valley, Essex Co., VI, 28, 1913, (H. Notman); New City, VI, 24, 1914, [J. W. Angell]. PENNSYLVANIA: Jeannette, VI, 16, (H. G. Klages), [J. W. Angell]. SOUTH DAKOTA: Oakwood, [J. W. Angell]; Whitewood, [B. Benesh]. WISCONSIN: Bayfield Co., [Hiestand]; Trout Lake, VI, 23, 1934, (D. G. Grey). CANADA: Aweme, Manitoba, VI, 14, 1911, VI, 23, 1908, VI, 26, 1912, (E. Criddle), [J. W. Angell], VI, 14, 1911, (N. Criddle), [J. W. Angell]; Bathurst, New Brunswick, VI, 25, 1925, (M. B. Dunn), [J. W. Angell]; Crow's Nest Pass, Alberta, VI, 6, 1930, (J. H. Pepper), [J. W. Angell];

Duparquet, VI, 15, 1938, (G. Stace Smith), [J. W. Angell]; Hudson Bay Territory, [G. H. Horn and H. W. Wenzel coll'ns]; Gravenhurst, 1900, [Field Museum]; Livingstone, [J. W. Angell]; Manitoba, VII, 7, 1905, [J. W. Angell]; Miami, Manitoba, VI, 28, 1916, (J. B. Wallis), [J. W. Angell]; Montreal, (Cab. Louis Joutel), [J. W. Angell]; New Foundland, [J. W. Angell]; Salt River, VI, 15, 1926, (J. Russell), [J. W. Angell]; Saskatchewan, [J. W. Angell]; Waugh, Manitoba, VII, 2, 1923, (J. B. Wallis), [J. W. Angell].

Platycerus marginalis Casey
(Pl. IV, fig. 1; Pl. VI, figs. 26, 28, 30-a, b, 35, 36, 37.)

Platycerus marginalis Casey, Ann. New York Acad. Sci., IX, pp. 639–640, 1897.

Platycerus cribripennis Van Dyke, Pan-Pacific Ent., IV, p. 107, 1928.

Original description: "Oblong, parallel, moderately convex, glabrous, the punctures of the head with very short hairs, the mandibles setose within and the side-margins of the prothorax bristling with rather numerous erect setae; body and legs black, the tarsi and antennae dark piceo-rufous; integuments moderately shining, the elytra feebly alutaceous. *Head* moderately large, ⅔ as wide as the prothorax, strongly and closely punctured, the mandibles short and stout, with the apex within broadly truncate, the truncature nearly straight, only feebly oblique and beset with about five small denticles, of which the superior is slightly larger and more acute, the inner basal tooth well developed and feebly bifid at tip. *Antennae* moderate, the club unusually developed, fully twice as long as the stem, broad, composed of four joints, the first only slightly shorter in a transverse sense than the others and more than twice as wide as the last joint of the funicle. *Prothorax* nearly ⅕ wider than long, widest and obtusely angulate at the sides at basal ⅖, the sides thence very feebly convergent and nearly straight, becoming arcuate near the prominent but rounded apical angles anteriorly, and much more convergent, becoming situate near the base posteriorly, the basal angles obtuse but prominent and not blunt; surface transversely convex, broadly concave near the reflexed side-margins especially anteriorly, the punctures moderately coarse and numerous but distinctly separated, becoming sparse or partially absent along the median line and near the side-margins. Scutellum wholly impunctate. Elytra short, scarcely ⅖ longer than wide, not obviously wider than the prothorax and about 2¾ times as long, the apex semicircularly rounded; humeri right and slightly denticulate, the intrahumeral impression feeble, striae moderately coarse, rather feebly impressed, closely and strongly punctured, sub-obliterated toward the humeri, stronger behind but wholly wanting behind the rather pronounced subapical swelling; intervals closely and strongly punctured, nearly flat, the punctures sparse and more serial toward the suture. *Legs* rather slender, the hind tarsi distinctly shorter than the tibiae. Length 10.9 mm.; width 4.1 mm. Washington State."

Type in the United States National Museum, Washington. Casey's lucid diagnosis needs no elaboration nor a lengthy comment; it is readily separated from *piceus* by its "finer, more superficial and smoother elytral sculpture,[76] more concave and fimbriate margins of the prothorax and blacker coloration." [77]

A recently described variant *cribripennis* as a subspecies of *depressus* (= *piceus* (Kirby)) is recorded here as a mutant of *marginalis*, diagnosed by Van Dyke.[78]

Platycerus cribripennis; original description: "Dull black, almost opaque. Head broad in male, coarsely, deeply punctured, genae prominent, subangulate at apex, with narrow margins; male mandibles with outer basal tooth acute and upturned. Prothorax in general similar to typical form and *marginalis* but with hind angles sharply rectangular and lateral margins narrow. Elytra with humeral tooth lacking and the surface coarsely, deeply, closely, and cribrately punctured, with neither striae nor intervals defined. Male, length 12.5 mm., breadth 4.5 mm.; female, length 12 mm., breadth 5 mm. The females as usual have smaller heads and narrower prothorax than the males, with more closely punctured heads and slightly broader elytra. California: Tassajara, Monterey County. Type in the Museum of California Academy of Sciences, San Francisco, California."

For convenience and ready comparison *marginalis* and *piceus* are figured on plate VI side by side; the most notable features being the antennae, sculpture and genitalia. In *marginalis* the funicle is shorter, leaflets of clava (terminal segment excepted) are distinctly coniform, while in *piceus* the anterior face of leaflets is straight (truncate). The sculpture of elytra in *piceus* is finer, more uniform, striate-punctate, interstices elevated and strongly convex, and on the whole more shining, especially the pronotum.

The variant *cribripennis* (figs. 32–33) is apparently one of those mutants, so often encountered in Lucanidae, in which males display the characteristics of the opposite sex. A female [79] before me, labelled *cribripennis* Van D., ex-Angell collection, Acad. Nat. Sci. Phila., has a much coarser and deeper sculpture than typical *marginalis* and, in proportion, is slightly broader. Two males considered to be representatives of this aberrant form (figs. 33, 33-a), one from Yosemite National Park [Angell collection], the other from Oregon [Benesh collection], differ from typical *marginalis* by the more uniform and clear cut puncturation of the pronotum and regular arrangement of elytral sculpture. The specimens are of intermediate development, with cutting edge of mandibles nearly destitute of denticles but with well formed basal bicuspid tooth; measurements of the type *marginalis* indicate a very small male, and *cribripennis* is a slightly larger form. However, they can not be considered the extreme developments as others vary from 9.2 to 15.5 mm.; the females 9.3 to 14.9 mm.

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[76] Sculpture irregular, without distinct striation.

[77] Casey must have meant opaque coloration.

[78] Pan-Pacific Ent., IV, p. 107, 1928.

[79] I have been unable to secure the loan of a paratype of *cribripennis*, from the California Academy of Sciences, for positive identification, nor would the authorities, that be, compare the specimen in question. However, Mr. Angell informs me that the specimen was compared by Jacques Helfer, and pronounced a good match.

According to Dr. Van Dyke (1928), the species ranges "throughout the entire Rocky Mountains region including the Wasatch Mountains of Utah and the high Cascade and Sierra Nevada mountains." The larva subsists, according to Van Dyke, on aspen (*Populus tremuloides* Michx.), and other deciduous trees cited among data under precise localities.

Distribution.—Approximately 300 examples were used in the definition of the species, and five males and ten females dissected for genitalic studies. Precise localities from which material was available:

ARIZONA: Harth Springs, VII, 14, [J. W. Angell]; Kaibab Forest, VII, (V. M. Tanner). CALIFORNIA: Cisco, VI, 22, 7500′, [J. W. Angell]; Lassen Co., VI, 6, 1913, (F. W. Nunenmacher), [J. W. Angell]; Mt. Ingalls, Plumas Co., 1940 (La Rivers). IDAHO: Arco, VI, 25, 1938, [J. W. Angell]; Moscow, V, 17, 1931, Alt. 2560′, Trap 5613A, (P. Rice), [J. W. Angell]; Wallace, [B. Benesh]. NEVADA: Canyon Lamoille, VI, 8, 1916, (H. B. Stafford), [J. W. Angell]; Reno, VII, 14, 1940, (La Rivers), [La Rivers]; Robinson Lake, Ruby Mts., 10000′, (H. B. Stafford), [J. W. Angell]. OREGON: Alsea, 20 mi. E. Waldport, I, 20, 1926, (J. Schuh), [J. W. Angell]; Baker, Marble Creek, VI, 20, 1940, (J. H. Baker), [J. W. Angell]; Bone Springs, Blue Mts., 5000′, VI, 27, 1935, (M. C. Lane), [J. W. Angell]; Dilley, [J. W. Angell]; Klamath Lake, VI, 5, 1914, (W. J. Chamberlin); Lake Co., V, 24, 1913, (F. W. Nunenmacher), [J. W. Angell]; Warner Mts., Lake Co., VI, 12, 1922, (W. J. Chamberlin). UTAH: Aspen Grove, [J. W. Angell]; Logan Canyon, Tony's Ranger Station, VI, 26, (C. L. Hayward), [J. W. Angell]; Raft River Mts.; Mt. Timpanogos; Silver Lake, VII, 15, (H. Skinner), [J. W. Angell]; St. George, Acc. 5409, (C. Palm), [J. W. Angell]; Uinta Mts. WASHINGTON: Cedar Mts., King Co., V, 11, 1936, [J. W. Angell]; Ira Sanger Pond, 3800′, Duffy's 4700′ Alt., 9 m. SE of Molson, VII, 12, 1919, (A. C. Burill), [J. W. Angell]; Milan, V, 7, 1940, (J. Standish); Miner's Ridge, Mt. Baker Nat. For. R., 15E T. 31N, Sec. 7, VII, 15–20, 1935, (A. M. Holland), [J. W. Angell]; Mt. Adams, W. Klickitat, 3500′, VII, 24–25, (L. A. Morley), [J. W. Angell]; Newman's Lake, V, 28, 1937, (M. H. Hatch), [M. H. Hatch]; Pullman, VI, 6, 1904, [J. W. Angell]; Renton, V, 9, 1940, (W. D. Turner), [J. W. Angell]; Skokomish River, V, 4, 1892; Tieton, VIII, 1, 1926, (F. H. Shirck), [J. W. Angell]; Van Horn, VI, 7, 1930, (A. D. Horn), [J. W. Angell]; Walla Walla, V, 21, 1926, VI, 27, 1927, (M. C. Lane), [J. W. Angell]. WYOMING: Wyo., (Otto Lugger Coll'n), [J. W. Angell]; ? Beaverfoot Range, ? Rocky Mts., (W. Wenman), [J. W. Angell]. BRITISH COLUMBIA: Copper Mts., VI, 9, 1928, (G. Stace Smith), on lumber, [J. W. Angell]; Creston, VI, 3, 1926, V, 16, 1928, on paling, X, 20, 1932, pupal cell in roots *Acer glabrum*, XI, 17, 1932, in roots of *Betula glabrum*, (all by G. Stace Smith), [J. W. Angell]; Golden, (Chas. Leng coll'n), [J. W. Angell]; Huntingdon, IV, 26, 1926, (K. F. Auden), [Ill. Nat. Hist. Surv.]; Lytton, VII, 4, 1922, (K. F. Auden), [Ill. Nat. Hist. Surv.]; Merritt, Midday Valley, VI, 7, 1924, (K. F. Auden), [Ill. Nat. Hist. Surv.]; Salmon Arm, IV, 15, 1928, dug from birch, V, 24, 1929, *Alnus rubra*, V, 3, 1933, (H. B. Leech), [J. W. Angell]; Salmon Arm, V, 11, 1935, reared from *Betula occidentalis*, (D. H. Leech), [J. W. Angell]; Sumos, IV, 26, 1924, (K. F. Auden), [Ill. Nat. Hist. Surv.]; Telegraph Creek (Chas. W. Leng coll'n), [J. W. Angell]; Vancouver, [J. W. Angell].

PLATYCEROIDES new genus

Platycerus Leconte, Proc. Acad. Nat. Sci. Phila., p. 345, 1861. Parry, Trans. Ent. Soc., London (3) II, p. 60, 1864. Casey, Ann. N. Y. Acad. Sci., v, pp. 164–165, 1875. Fuchs, Bull. Brooklyn Ent. Soc., v, p. 58, 1882. Blanchard, Trans. Amer. Ent. Soc., XII, p. 169, 1885. Casey, Bull. Calif. Acad. Sci., I, p. 331, 1885. Horn, Trans. Amer. Ent. Soc., XIII, Proc. p. xiii, 1886. Casey, Can. Ent., XXVII, p. 154, 1895. Fall, Can. Ent., XXXIII, p. 291, 1901; Ent. News, XVII, p. 393, 1906. Casey, Mem. of Coleop., v, p. 373, 1914. Van Dyke, in Essig's Insects of western North America, p. 447, 1926; Pan-Pacific Ent., IV, p. 108, 1928. Benesh, Ent. News, LIII, p. 222, 1942.

Characters of the genus.—Elongate, subdepressed. Head small, round, similar in the sexes, clypeus angular and produced, anterior angles obtuse, anteocular bosses prominent, eyes fairly large, ocular canthus encroaching in front on the eyes; antennal clava tri-lamellate in the sexes, and as long as or longer than the funicle (♂), latter longer than the clava in female; mandibles simple, symmetrical, shorter than the head, hardly differentiating in the sexes (fig. 63-d); labium (fig. 40-a) hairy, inner maxillary lobe (fig. 40-b) pointed, halea prominent, densely clothed with long golden hair. Prothorax broader than long, more or less rounded in female. Elytra nearly parallel, humeri not mucronate, similar in the sexes. Legs slender in the male, shorter and stouter in female; anterior tibiae slender and not strongly dentate on exterior margins in male, short and distad-broadened (fig. 45) in female, external margin strongly dentate. Intermediate and posterior tibiae spinate in both sexes. Tarsi slender and as long, or nearly so, as the tibiae (♂), much shorter in female; praetarsus as long as the third and fourth segments together, second segment less than one-third the length of praetarsus, third segment one and one-half times as long as the second, fourth segment one and one-half times as long as the third, fifth segment one and one-half times as the fourth, or, expressed in units: 7, 2, 3, 4, 6, and of equal width throughout. Male fully winged; female apterous.

Designated genotype: *Platycerus agassizi* Leconte (1861).

The genus *Platyceroides* contains all the species of *agassizi* group of *Platycerus* of senior authors, and embraces three distinct phylogenetic series, viz.: *agassizi, latus* and *laticollis; agassizi* series includes *aeneus* Van Dyke, *opacus* Fall and *thoracicus* Casey; *latus* Fall and *viriditinctus* Benesh form the second homogenous series, while *laticollis* Casey, superficially allied taxonomically but unrelated from morphological concept, may be considered as the third series. Disregarding the phylogenetic series, based primarily on genitalic structural characters, the species of *Platyceroides*[80] can be tabulated in following manner:

Synoptic Key to the Species of Platyceroides[81]

1. Males elongate, parallel and less convex than females, club of antennae as long as or longer than funicle, middle and hind tibiae long and narrow, armed with but few sharp teeth.............................2

Both sexes strongly convex, club of antennae shorter than funicle, middle and hind tibiae very robust and heavily armed with series of short spines. Not differentiating in the sexes; obovate, strongly convex; sides of prothorax broadly rounded at middle, oblique in front and behind or the latter slightly sinuate, with hind angles obtuse, side margin very narrow; elytra with strial arrangement well indicated, the alternate intervals slightly elevated, punctures rather numerous and but moderately coarse, color rufopiceous or piceous, not bronzed **Platyceropsis keeni** (Casey)

2. Species either rufous or somewhat piceous and generally with a pronounced bronze luster, elytra with definitely impressed striae or striate arrangement of punctures..3

Species piceous or black, with obscure bronze luster, elytra with striae not clearly defined..5

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[80] For convenience the key includes *Platyceropsis*.

[81] After Van Dyke, Pan-Pacific Ent., IV, p. 105, 1928, modified to exclude all species of *Platycerus* and include *Platyceroides viriditinctus* (Benesh), and *thoracicus* (Casey).

Black, shining, dorsad with strong green luster; elytra linearly punctured. Sides of prothorax, in anterior half, feebly arcuate to well behind the middle, middle broadly rounded, sinuous to basal angles, which are acuminate and pointing obliquely backwards; head and pronotum cribripunctate, elytra linearly punctuate; broad species, twice as long as broad..**viriditinctus** (Benesh)

3. Sides of prothorax sinuate behind and hind angles right angled, genae hardly more prominent than eyes, prothorax with lateral margin of moderate width, disk closely punctured, especially at sides, elytra with striae always well impressed, color rufopiceous with marked bronze luster..**agassizi** (Leconte)

Sides of prothorax anterad obliquely arcuate, broadly rounded behind the middle, then sinuate to basal angles, striate-punctate, interstices flat, color rufous with brassy luster....................**thoracicus** (Casey)

Sides of prothorax oblique or hardly sinuate behind, with hind angles obtuse; lateral margin broad, disk not very closely punctured even at sides..4

4. Upper surface with a definite aeneous luster, genae not more prominent than eyes, anterior margin of prothorax slightly emarginate; strial punctures of elytra more prominent than interstrial, disk quite convex even in males..................................**aeneus** (Van Dyke)

Upper surface rufocastaneous (♂) or rufopiceous (♀), without marked bronze luster, genae decidedly more prominent than eyes, head in front of eyes wedge-shaped, anterior margin of prothorax rather deeply emarginate, strial punctures of elytra not more prominent than interstrial, the elytral punctuation thus somewhat confused, males quite flat and with very broad margins of prothorax..........**laticollis** (Casey)

5. Sides of prothorax broadly, rather evenly arcuate, strongly sinuate behind, with hind angles right or acute, side margin decidedly reflexed; head and pronotum coarsely, closely punctured, pronotum less closely in females; elytra coarsely and quite irregularly punctured, the strial and interstrial punctuation not readily separable; color piceous or black **latus** (Fall)

Sides of prothorax in front oblique, divergent behind and hardly arcuate to well behind the middle, then broadly rounded and sinuate to hind angles which are right or acute; head coarsely, closely punctured, pronotum more finely; elytra very finely, irregularly and not closely, especially in females; strial arrangement of punctures only evident here and there; color dull black..............................**opacus** (Fall)

The females of *Platyceroides* generally differ from males by anterior half of pronotum being more arcuate (males more or less oblique), which the accompanying figures illustrate better than reams of descriptions, and darker coloration, smaller antennal club, and coarser sculpture of the pronotum and sides of elytra. They resemble the tenebrionid *Uloma,* and as they are flightless, I presume, are taken under the same conditions, under bark and logs, with the tenebrionid, with which they may be associated in many western collections.

Platyceroides agassizi (Leconte) (Pl. VII, figs. 40 to 47.)

Platycerus Agassii Leconte, Proc. Acad. Nat. Sci. Phila., p. 345, 1861. Van Dyke, Pan-Pacific Ent., IV, pp. 106, 108, 1928.
Platycerus parvicollis Casey, Ann. New York Acad. of Sci., v, p. 164, 1875.
Platycerus pacificus Casey, Ann. New York Acad. of Sci., v, p. 165, 1875.
Platycerus californicus Casey, Bull. Calif. Acad. of Sci., I, p. 331, 1885.

Platycerus agassii; original description: "(♀) elongato ovalis, supra obscure aeneus, capite thoraceque sat dense punctatis, hoc linea dorsali laevi, latitudine duplo breviore, lateribus fortiter, marginatis valde rotundatis, angulis posticis rectis prominulis, elytris obsolete striatis, striis punctatis, interstitiis rugosis confuse punctatis; tibiis postcis denticulo externo ad medium armatis. Long. .38."

Type No. 3692 in the Museum of Comparative Zoölogy, Cambridge, Massachusetts.

Platycerus parvicollis; original description: "Form slender, rather depressed; sides parallel; dark reddish-brown, somewhat bronzed; head and pronotum darker; legs throughout dark brown; integuments polished. Head rather small, coarsely, deeply and rather densely punctate; front with several long coarse fulvous setae; mandibles small; antennal club about equal in length to the funicle; last joint very slightly oblique, slightly longer than wide. Prothorax small, widest very near the middle where it is nearly twice as wide as long, and where the sides are distinctly angulate from above, the angle narrowly rounded; apex broadly, very feebly emarginate, slightly narrower than the base; the latter transversely truncate; angles slightly prominent, acute, not at all rounded; sides nearly straight anteriorly and posteriorly, rather strongly convergent in both sexes,[82] feebly sinuate near the base; disk broadly, feebly convex, rather broadly but not strongly reflexed at the sides, coarsely and strongly punctate, impunctate median line, dense towards the sides, except in the reflexed portion, where they are very sparse and coarser. Scutellum much wider than long, parabolic, very sparsely, coarsely punctate at base. Elytra at base fully as wide as the prothorax; sides parallel, distinctly arcuate behind, nearly straight and feebly divergent in the basal fourth; together evenly and rather strongly rounded behind, disk transversely and moderately convex, four-fifths longer than wide, three and one-third times as long as the prothorax, widest at two-fifths the length from the apex where it is one-fourth wider than the latter, striae nearly equidistant, feebly impressed, rather finely, deeply punctate, the punctures closely approximate; intervals feebly convex, sparsely creased, finely, unevenly and sparsely punctate. Legs slender; posterior tarsi just visibly shorter than the tibiae. Length 10.3 mm.; width 4.0 mm. California."

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[82] The only female in Casey's collection is the female which he described under the name *californicus*; the above is applicable strictly to the male.

Platycerus pacificus; original description: "Oblong, rather convex, polished, black; [88] sides parallel and nearly straight. Head moderate in size, sparsely, coarsely punctate; antennal club distinctly longer than the funicle, last joint almost asymmetrical, distinctly wider than long. Prothorax widest at one-third the length from the base, where it is two and one-half times as wide as the head, and two-thirds wider than long; sides—viewed vertically—broadly rounded, sinuate near the basal angles which are acute, not rounded, and slightly prominent; apex slightly narrower than the base, broadly and feebly emarginate, the latter transversely truncate; disk broadly convex, rather broadly and strongly reflexed at the sides, very sparsely, finely punctate in the middle with an impunctate median line; punctures much denser laterally; in the reflexed portion along the margin they are again sparser but much coarser. Scutellum ogival, slightly wider than long, punctate at base, impunctate in the apical half. Elytra at base about as wide as the thorax; sides parallel, distinctly arcuate posteriorly, straight in the basal third or fourth; together broadly rounded behind; disk transversely, rather strongly convex, two and three-fourths times as long as the prothorax; striae feeble, rather closely punctate, equidistant; intervals very sparsely punctate. Legs black, tarsi very slightly paler toward apex, the posterior nearly as long as the tibae. Length 10.0 mm.; width 4.2 mm. California."

Platycerus californicus; original description: "Very convex, slightly oval in outline, highly polished; body reddish-brown; legs paler, dark-rufous; elytra with a slightly aeneous lustre. Head slightly wider than long; occiput moderately convex; punctures very coarse, rounded, deeply impressed, somewhat irregularly but densely distributed, a small space in the middle of the base impunctate; lateral tuberculations moderate; labrum strongly transverse, short, very coarsely and densely punctate; mandibles small, the left rather strongly toothed, the right extremely obtusely and obsoletely so; antennae short, slender; basal joint nearly as long as the remainder, second nearly as long as the next two together, much more robust; joints three to seven closely connate; the latter very slightly wider than the preceding six; tenth wider than long, evenly rounded; all three coarsely and rugosely punctate toward tip and inwardly. Prothorax widest at two-thirds its length from apex where it is two and one-half times as wide as the head and one-half wider than long; sides at this point strongly arcuate, thence moderately convergent and nearly straight to the apex, more strongly convergent to the angles which are slightly prominent, not at all rounded, and before which the sides are rather deeply sinuate; disk coarsely and rather densely punctate very near the sides, elsewhere more finely and very sparsely so, rather strongly convex. Elytra widest at two-thirds their length from the base where they are nearly one-fourth wider than the pronotum and one-third wider than at base; sides rather strongly arcuate posteriorly, strongly convergent toward the apex which conjointly is rather evenly and strongly rounded; disk strongly convex, distinctly striate except very near the sides where the punctures become confused; striae finely punctate with the interspaces much longer than the punctures; intervals strongly convex, very feebly and distinctly rugulose, each with a single or partially double row of excessively minute punctures along the middle of its crest. Under surface very coarsely punctate, densely so on the abdomen. Length 9.5 mm. California (Eureka, Humboldt Co., 1 ♀)."

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[88] The insect is never black, in true sense of the word, being at most piceous or pitchy-black.

It is evident that Dr. Leconte erred in designating the insect he had before him as a female, and describing it as such; there is no doubt he was misled by the insect's appearance, the small head and mandibles reminded him too much of the eastern *P. virescens* (F.) ♀, with which he may have compared it. By inadvertence, Casey further perpetuated the error by his statement: "I have recently had occasion to inspect the original female [sic!] type of *Agassii* in the museum at Cambridge, Mass., and find that the specimens heretofore regarded by Mr. Fuchs and myself as representing that species, were correctly identified. The type, apart from its slightly paler color due to immaturity, does not differ in the slightest degree from the average female, and the punctuation of the pronotum is equally dense."

This opinion perhaps induced Fuchs[84] to report: "of this species I unfortunately have not seen the male, it appears to be very rare, and despite my endeavors I have not been able to obtain one. The antennae of the ♀ agree with the others of the genus; the terminal joint is rather more rounded, and there is a distinct transverse impression at the middle as shown in figure 8."

The transverse impression, to which Fuchs alludes, is a noteworthy character, sometimes cleaving the terminal segment to such an extent that one could accept it for a teratological malformation, representing two antennal segments fused (fig. 41-a); this anomaly has thus far been observed only in males, the females having the terminal segment reduced to a rounded button (fig. 47), with only the anterior portion pubescent.

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[84] Bull. Brooklyn Ent. Soc., v, p. 58, 1882.

To the then existing confusion Casey[85] added yet another gem, when he stated: "A sexual character, which seems to have escaped observation, exists in perhaps its greatest development in *quercus*. It will be seen that in this species, the posterior tarsi of the female are much shorter than in the male. In *oregonensis* the same condition holds, but to a less marked degree, and in *Agassii* the character completely disappears, the tarsi in both male and female being very long and slender, with the fourth joint twice as long as wide. The type *californicus* is a female, and, as the posterior tarsi are extremely short, relatively more abbreviated even than in the female of *quercus* with the fourth joint fully as wide as long, it is probable that the male, also, has a shorter tarsus than *Agassii*, and that the species is to be associated with *quercus* and *oregonensis*, rather than with *Agassii*."

All of the foregoing is at variance with recent investigations; in the original series of *agassizi* in Leconte's cabinet are three examples, including the type. These were reviewed by the writer during his visit to Cambridge in the latter part of 1940, who promptly assured Dr. Darlington that the specimens were males, adding that "there is something wrong with Leconte's description." Further data elicited from Dr. Banks is startling, as he reports that Mr. Werner re-examined the types and "there is no question about it" the type is a male, with a part of the genitalia exserted, and the other two appear to him to be different from the type. This surprising disclosure indicates that all past workers of consequence (Leconte, Casey and Fuchs), who examined the type, failed to note or disregarded the evidence so conveniently presented for them; it also may be recorded here that in the 4,000 odd specimens used in the present study only two (!) indicated that their genitalia had been examined (G. H. Horn collection, 1 ♀; Ohio State University, 1 ♀).

In reviewing *agassizi*, Dr. Van Dyke[86] notes: "The most frequent of these (subspecies) is *pacificus* Casey of which *californicus* Casey is the female and *peregrinus* Casey, a synonym, a very weak race differing as regards the male in being somewhat smoother and the female less rugose, with the elytra more distinctly striate.

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[85] Ann. N. Y. Acad. Sci., v, p. 164, 1875.

[86] Pan-Pacific Ent., IV, p. 108, 1928.

The subspecies *parvicollis* Casey is a fairly distinct subspecies, at least as regards the male which is evidently narrower and more elongate than typical *agassizi* and, as indicated by its name, with a smaller prothorax. *Pacificus* ranges from northern Mendocino County, California, to about Coos Bay, Oregon, while *parvicollis* seems to be limited to Humboldt Bay, California."

We may, with propriety, ask: what are these so called "subspecies" and, if *californicus* is the female of *pacificus,* how do the females of *agassizi* and *parvicollis* appear in comparison with *californicus?* To answer these questions I believe it essential to summarize the obvious characters presented by the material used in this revision and set down the differences noted, and describe the forms omitted by Dr. Van Dyke in his synopsis.

The males of *agassizi, parvicollis* and *pacificus* can be separated thus (after Casey):[87]

Sides of the prothorax—viewed vertically—distinctly subangulate. Pronotum finely, densely punctate; antennal club much longer than the funicle, the last joint strongly asymmetric, the longest dimension being in a direction oblique to the axis of the club, and very much exceeding the width; sixth joint of funicle strongly produced anteriorly; fifth joint of hind tarsi as long as the first and second combined; elytra equal in width to the prothorax..**Agassii**

Pronotum much more coarsely and sparsely punctate; antennal club equal in length to the funicle, the last joint much less, although distinctly, asymmetric, slightly longer than wide; sixth joint of funicle just visibly more prominent anteriorly; fifth joint of hind tarsi distinctly longer than the first two combined; elytra at apical two-fifths fully one-fourth wider than the prothorax; color pale, brown.......................... ..**parvicollis**

Sides of prothorax—viewed vertically—broadly, evenly arcuate, subangulate when viewed laterally, the surface much more convex and declivous at the sides; pronotum finely and very sparsely punctate; antennal club slightly but distinctly longer than the funicle, the last joint wider than long; sixth joint of funicle not at all prominent anteriorly; elytra equal in width to the prothorax; surface highly polished; color deep black **pacificus**

Platyceroides parvicollis (Casey) and *P. pacificus* (Casey) appear when placed side by side, to be nearly identical, but closer examination reveals divergencies in conformation of the prothorax, width of body, elytral sculpture and coloration. The antennae of

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[87] Ann. N. Y. Acad. Sci., v, p. 164, 1875.

parvicollis (fig. 46) and *pacificus* are identical, the terminal segment is as long as broad, rounded on extreme side, anterior margin straight, obtusely pointed antero-laterad, and minus the transverse impression of typical *agassizi* (fig. 41); leaflets of clava with pubescence confined to the lobes, bases nude and finely granulate, subopaque. Prothorax of *parvicollis* is distinctly narrower, oblique laterad, broadening to basal third, thence rounded and converging to posterior angles, which are subacute; *pacificus* is broader than either *agassizi* (fig. 42-b) or *parvicollis* (fig. 46), its greatest width being mediad, while in the others this is more basal, gently arcuate in anterior half, center broadly rounded, sinuous to basal angles, the latter evidently more acute than in *parvicollis*. Elytra are narrower and parallel in *parvicollis,* while in *pacificus* and *agassizi* they are diverging to apical fourth, with margins of posterior half strongly explanate.

Dr. Van Dyke's assertion (1928) that *peregrinus* Casey is a synonym of *pacificus,* is certainly not based on an exact examination of the type, nor even on a careful perusal of the description; as has been already brought forth, *P. peregrinus* Casey is a minor form of *P. virescens* (Fab.), an insect alien to *Platyceroides.* Such a hasty assertion, apparently a mere surmise, is aptly covered by a critical censure expressed by Casey,[88] in response to a similar opinion by Horn,[89] where he states: "such absolute and unqualified assertions, unaccompanied by any comparative statements and hastily made without examining the type or even an authentic representative of the species condemned, are entirely uncalled for and generally of very little scientific value."

The females of the *agassizi* complex diverge too much in habitus and sculpturation not to deserve a share of comment. It is significant that such a coleopterist of renown and long experience as Dr. E. A. Chapin, the present curator of insects at the United States National Museum, after comparison of a lot of females of the *agassizi* complex, noted that practically every lot appears to differ slightly from other lots and there seems to be no firm basis yet established for the determination of specific limits, and the three specimens from Sand Lake, Oregon, are not exactly like any species in the Casey collection, but may be *P. thoracicus* Casey.

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[88] Bull. Calif. Acad. Sci., II, pp. 127–263, 1886.
[89] Trans. Amer. Ent. Soc., XIII, p. 13, 1886.

The three female specimens referred to by Dr. Chapin are considered the true females of *pacificus,* and *californicus* (Casey) the female of *agassizi,* Dr. Van Dyke's assignation notwithstanding; the yet nondescript female of *parvicollis* is characterized as follows:

Platyceroides parvicollis Casey, ♀. Subconvex, pitchy-black; head rugose and closely punctured, ocular canthus not broader than the eyes; last joint of clava as in the male (fig. 46), but correspondingly smaller; prothorax broadly arcuate to posterior third, thence sinuous to basal angles, which are right, puncturation cribriform, close and distinct. Scutellum parabolic, base obsoletely punctate. Elytra distinctly ovate, narrow at base, humeri not rounded but square, broadening to apical third, margins explanate from basal third to apex; basal half scarified, remainder punctato-striate, intervals uneven with some random punctures.

The male type of *parvicollis* is in the United States National Museum, and is here designated the holotype; the female here described, the allotype, Acc. No. 4137, Benesh collection, was received through the generosity of Mr. E. R. Leach, Piedmont, California, as the female of *agassizi* (Lec.), to whom I wish to extend my thanks for this most welcome addition.

Dr. Van Dyke suggests that *parvicollis* seems to be confined to Humboldt Bay, California; the female here described, was taken at Ben Lomond, V, 21, 1932, a locality in the San Francisco Bay region, thus extending the range of the insect miles southward. Two males, identified by Dr. Chapin as *P. parvicollis* represent two other localities, i.e., Mendocino and Sonoma Counties, and another male taken in the Santa Cruz Mountains, VI, 12, 1938; quite an extensive habitat in the coastal belt of north and central California.

The females may be tabulated thus:

Elytral intervals equal in width, very minutely, sparsely and subserially punctate; elytra strongly convex; rufous **agassizi** (Leconte) (=*californicus* (Casey))

Elytra obovate, base scarified, apical half punctate-striate, intervals varied, subobosolete, with random punctures; less convex than *californicus,* pitchy-black, shining.................................... **parvicollis** (Casey)

Elytra subparallel, less convex, intervals indistinct, nearly flat; puncturation of head and pronotum fine, dispersed; pronotum and elytra laterad rugulose; ferrugineous to rufo-piceous, feebly shining...... **pacificus** (Casey)

Measurements of the females: width × length in millimeters:

	agassizi (= *californicus*)	*parvicollis*	*pacificus*
Head	1.9 × 1.0	1.85 × 1.0	1.97 × 1.1
Prothorax	4.05 × 2.3	4.0 × 2.5	4.2 × 2.4
Elytra	4.5 × 6.4	4.3 × 6.3	4.7 × 6.0
Humeri	3.9	3.5	4.1

In figures 45-a and b, are presented two forms of female anterior tibiae; although they display features which could be considered as specific characters, examination of the genitals disposed of the possibility of their being distinct. The male genitalia (figs. 43, 44) are distinct, diverging from those typical to *Platycerus;* roughly they consist of a stout median strut, to which is affixed a pair of multiform apophyses; the flagellum is slender and long, well chitinised or sclerotized (in *Platycerus* membranous), tip broadened and lobate (leaf-shaped); in the subspecies *parvicollis* the tip is evidently simply truncate, without visible lobes or notches; female genitalia (fig. 47-a) has strongly S-shaped coxites, triangular valvifers and short, simple styli, all apparently well sclerotized.

Approximately 150 specimens (120 ♂, 30 ♀) were studied, of which number 80 ♂ and 15 ♀ were dissected; measurements of the specimens (from Benesh collection) vary from 8.7 to 10.8 mm., ♂; 9.2 to 10.6 mm., ♀.

Distribution.—Recorded from California and Oregon. Precise localities:

CALIFORNIA: Ben Lomond, V, 21, 1932, [B. Benesh]; VII, 16, 1937, V, 1932, (M. Cazier), [J. W. Angell]; Blocksburg, V, 30, 1935, (H. H. Rayner), [J. W. Angell]; Caspar, V, 14, 1938, on pine, [J. W. Angell]; Caspar, Mendocino Co., IV, 26, 1936, on pine, (J. Helfer), [J. W. Angell]; Caspar, IV, 11, 1941, on Bishop pine, (*P. muriatica*), [J. W. Angell]; Crescent City, VI, 1937, U. S. Madrone Forest Camp, (K. L. Maehler), [J. W. Angell]; Ft. Bragg, VI, 20, 1940, [J. W. Angell]; Ft. Seward, V, 20, 1935, (J. E. Mabry), [J. W. Angell]; V, 21, 1935, (B. Sutton), [J. W. Angell]; V, 20, 1935, (Van Dyke), [J. W. Angell]; Mendocino Co., VI, 4, 1938, (F. W. Nunenmacher), [J. W. Angell]; Mendocino Co., VI, 12, 1938, (J. Helfer), [J. W. Angell]; V, 19, 1928, (E. R. Leach), [B. Benesh]; Muir Woods, [J. W. Angell]; Redwood, Corralitos, Sta. Cruz Mts., V, 13, 1907, (J. C. Bradley), [J. W. Angell]; San Mateo, [J. W. Angell]; Sta. Cruz Mts., VII, 12, 1938, (F. W. Nunenmacher), [J. W. Angell]; Zenia, VI, 19, 1935, (H. J. Rayner), [J. W. Angell]. OREGON: Dixie, VI, 17, 1907, [J. W. Angell]; Josephine Co., VI, 4, 1910, (F. W. Nunenmacher), [J. W. Angell]; Sand Lake, V, 14, 1940, (K. M. & D. M. Fender), [B. Benesh].

Platyceroides aeneus (Van Dyke) (Pl. VIII, figs. 52, 53 a to e.)

Platycerus aeneus Van Dyke, Pan-Pacific Ent., IV, p. 109, 1928.

Original description.—"Elongate, elliptical, moderately convex, shining, rufopiceous with a pronounced luster, the legs quite rufous. Head with front flattened, coarsely, irregularly and rather closely punctured, with a few semi-erect hairs, and the usual smooth oblique ridges in front of the eyes; clypeus slightly emarginate in front and depressed, sides oblique, galea lobed and hardly more prominent than eyes; mandibles but moderately prominent, with a blunt tooth near the middle of inner margin; antennae with segments 3 to 7 slightly but gradually increasing in breadth, 8 to 10 broadly unilaterally dilated forming the usual loose club which is slightly longer than the funicle, 8 to 9 twice as broad as long, the tenth somewhat pentagonal. Prothorax 1.5 mm. broader than long; sides broadest slightly behind middle, a bit arcuate in front, oblique and but faintly sinuately convergent to obtuse hind angles; base just perceptibly arcuate; side margins broad and considerably reflexed; disk rather coarsely, irregularly and somewhat closely punctured, especially at sides, a longitudinal smooth area at middle, with a faintly impressed line posteriorly. Elytra not quite a third longer than broad, with humeri well rounded, vaguely dentate at most, the sides slightly widened to beyond middle then evenly arcuate to apical angles, the margins quite broad and reflexed, especially posteriorly; disk with striae finely impressed, in most places indicated only by the moderate-sized, rather closely placed punctures; intervals flattened and irregularly punctured with well-spaced punctures. Beneath rather coarsely, regularly and quite closely punctured. Legs long and delicate, front tibiae distinctly serrate as usual, middle and hind tibiae slender, the tarsi long, about equal in length to tibiae. Length 10 mm., breadth 4.25 mm."

"Female generally shorter, broader, more convex and generally robust, more rufous, with aeneous luster less pronounced. Head smaller, sides in front more evenly arcuate, mandibles smaller; antennae shorter, the club smaller and not longer than funicle. Prothorax longer and narrower, with sides quite broadly and evenly arcuate, side margins narrower, the disk more convex. Elytra elliptical, quite convex, the strial punctuation more regular and the punctuation of intervals finer and sparser. Legs shorter and stouter as usual, the femora and tibiae especially so. Length 9.5 mm.; breadth 4.5 mm. Holotype and allotype in the Museum of California Academy of Sciences. Oregon: Clatsop County and Tillamook; Washington: Forks (Clallam County), Hoquiam, Humptulips."

A distinct species allied to *P. agassizi* (Lec.), readily distinguishable from its congeners by the narrower prothorax and strong aeneous luster. The male antennae are nearly alike in the two species (compare figures 41 and 53-a), but distinct in females. In typical *agassizi* (= *californicus* (Csy.)) (fig. 47) affixation of the club is eccentric, lobes of the 8th and 9th segments pointed, base finely and closely punctured, glabrous, with sensory area restricted to anterior half, sparsely pubescent; in aeneus (fig. 53-d) the juncture of segments is concentric, 8th and 9th segments basad rounded, anterad straight or nearly so, terminal segment circular in outline, finely granulate throughout, anterior half fairly densely pubescent.

The styli of female genitalia (fig. 53-c) are not symmetrical; the left stylus is parallel-sided, apex simply rounded, while the right is broad, shorter than the left, apex bilobed. Coxites stout, curved inward, inner margin basad strongly wrinkled, apices not alike, right with a lateral node, left simple.

Approximately 80 exemplars, all males, were studied from outside sources, and 26 males and 1 female in the author's cabinet; of this number 5 examples were subjected to dissection. Measurements of *P. aeneus* (Van Dyke) vary from 8.9 to 10.2 mm., ♂, 10.3 mm., the unique female, of which the measurements (length × width) are: head 1.3 × 1.95 mm., prothorax 2.6 × 4.25 mm., elytra 6.3 × 4.6 mm.

Distribution.—Recorded from Oregon and Washington. Precise localities:

OREGON: Boyer, V, 31, 1936, [J. W. Angell]; Cannon Beach, Clatsop Co., (E. C. Van Dyke); Crater Lake, VII, 1935, [J. W. Angell]; Gearhart, VI, 30, 1933, (M. C. Lane), [J. W. Angell]; Manzanita, IV, 21, 1940, [J. W. Angell]; Sand Lake, V, 12, 1940, (K. M. Fender), [B. Benesh]; Tillamook, (J. R. Slevin). WASHINGTON: ? Boretore, V, 24, 1941, [J. W. Angell]; Forks, Clallam Co., (Mrs. H. Van Duzee); Centralia, V, 5, 1928, [J. W. Angell]; Hoquiam, (E. C. Van Dyke); Humptulips, (E. C. Van Dyke); Lake Crescent, VI, 11, 1933, (M. H. Hatch), [M. H. Hatch]; Olympic Hot Springs, VI, 12, 1933, (M. C. Lane), [J. W. Angell]; Satsop River, VI, 1932, elev. 1200′, (J. E. Schwartz), [J. W. Angell]; Solduk Springs, VI, 11, 1932, (M. H. Hatch), [M. H. Hatch], [J. W. Angell].

Platyceroides thoracicus (Casey) (Pl. VII, figs. 48 to 51.)

Platycerus thoracicus Casey, Can. Ent., XXVII, p. 154, 1895. Van Dyke, Pan-Pacific Ent., IV, p. 111, 1928.

Original description.—"Stout, convex, moderately shining, black, with a scarcely visible piceous tinge. Head small, coarsely, confluently punctate, a median area at base subimpunctate; mandibles very small; antennae short, black, the scape slightly longer than the funicle, the latter a little longer than the club, with the joints compactly joined, the sixth scarcely wider and not inwardly prolonged; club in great part sensitive, the two basal joints about twice as wide as long, more developed internally, the last transversely ovulate and eccentrically attached. Prothorax large, one-half wider than long, widest and more strongly rounded at basal third; sides rapidly convergent toward base and deeply sinuate at the basal angles, the latter right; apex sinuate, but slightly narrower than the base and two-thirds as wide as the disk, the latter feebly impressed along the basal margin, feebly explanato-reflexed at the sides, and coarsely, very closely punctate, the punctures sparser near the centre. Elytra nearly one-half longer than wide, distinctly more than twice as long as the prothorax, at base not as wide as the disk of the latter; disk coarsely, not very closely, unevenly punctate, with tolerably uniform but unevenly impressed series of coarser punctures. Legs moderate in length, rather slender; femora remotely punctate; tibiae slender, not much wider at apex, with impressed series of asperate punctures, seriately setose; tarsi short, stout, but slightly more than one-half as long as the tibiae. Hypomera coarsely and scarcely confluently punctate, very inconspicuously setose. Length, 11.0 mm.; width, 5.0 mm. California."

"Differs radically from [*Platyceropsis*] *Keeni* in the structure of the antennal club and tibiae. It is related to *californicus*, but differs conspicuously in its obese form and larger prothorax, and also in its coarser and much denser sculpture throughout. The types of both this species and *Keeni* are apparently females."

The type is a female conserved in the National collections, United States National Museum, and is here designated the lectotype of the species. The following description of a male, the allotype, a long felt want, from a unique example in the Angell Collection, Academy of Natural Sciences of Philadelphia, with indefinite "California" label, and marked "this specimen determined by T. L. Casey," can be summarized as follows:

♂. Rufous, with brassy luster. Head slightly broader than long, rugosely sculptate, anterior angles rounded, diagonal to eyes, disk with frontal, obsolete median impression, ocular bosses prominent, impunctate, strongly shining, behind the eyes abruptly constricted or narrowed. Prothorax with anterior margin nearly straight, angles produced and rounded, thence diverging to posterior third, which is broadly arcuate, and sinuate to basal angles, latter obtuse, sculpture cribriform. Scutellum broader than long, obtusely rounded, with several centrally situated punctures. Elytra nearly parallel, broadest in posterior third, margins strongly explanate, punctate-striate, punctures of irregular shape, intervals apparently flat, suture finely punctulate. Legs fairly slender, anterior tibiae distad broadly furcate, with four unequal serrations; intermediate and posterior tibiae with a conspicuous denticle in distal third, setose; tarsi nearly as long as the tibiae, glabrous on top, beneath with clusters of golden pile. Beneath reddish-brown, abdominal sclerites remotely punctured.

Measurements of the male: length × width in millimeters:

Head (inclu. mandibles)	1.7 × 2.15
Prothorax	3.0 × 4.5
Elytra	7.5 × 4.9

Another misunderstood species which Dr. Van Dyke suppressed as synonymous to *P. keeni* (Casey) with these observations:[90] "*Platycerus thoracicus* Casey, from specimens taken on Humboldt Bay, California. Typical specimens of the latter, I have studied from the type locality and I have also taken a good series from Waldport and Cannon Beach, Oregon. The larger specimens of this species, for it may be 12 mm. or over in length and very robust, might be separated from *keeni* by their size and robustness, but the smaller specimens, when carefully compared with typical *keeni* from the type lot, absolutely cannot be separated either by size, appearance or by any character. I am, therefore, reducing the name *thoracicus* Casey to synonymy."

A glance upon figures 50, 51, and 63-b, c, portraying the antennae of both sexes of *thoracicus* and the female of *keeni,* and presenting the outlines of the pronota, will be sufficient to convince any student that we have two distinct species in hand. The male antennae (fig. 51) assimilate more to *P. agassizi* than *keeni,* with which it is confused by Dr. Van Dyke. The like applies to the pronota of the females (figs. 50, 63-c); *thoracicus* has the basal angles right, *keeni* obtuse, although this character is omitted in the description. The non-mention by Casey of tibial spines on *thoracicus* is an oversight hard to account for; had this feature been reported it would have certainly simplified the matter by presenting an entirely different concept of the species, thus promoting its identification.

Regardless of these omissions, we cannot escape the fact that Casey used *californicus* for comparison in describing *thoracicus,* stating: "It is related to *californicus,* but differs conspicuously in its obese form and larger prothorax, and also in its coarser and much denser sculpture throughout." This is further emphasized by Dr. Chapin, in a letter to me, after comparison of the unique pair of examples used in this study, when he notes that this species (*thoracicus*), with its slender posterior tibiae bearing each a single denticle near the apical third, is closely related to *P. agassizi* (Lec.), but not at all near *P. keeni* (Casey). While it appears to be a distinct species, a long series of specimens might show it to be a variant of *agassizi*. At present, in its very coarse sculpture, both of the pronotum and elytra, it is unlike any other specimen in the Casey or Museum collection.

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[90] Pan-Pacific Ent., IV, p. 111, 1928.

Only two examples, both in the Angell Collection, were studied, a male, here described, and a typical female (determined by Dr. E. A. Chapin), Sta. Cruz Mts. (ex-coll. Otto Lugger), conserved in the Angell Collection,[90a] Academy of Natural Sciences of Philadelphia.

Platyceroides opacus (Fall) (Pl. VIII, figs. 54, 55 a to e.)

Platycerus opacus Fall, Ent. News, xvii, p. 393, 1906. Van Dyke, Pan-Pacific Ent., iv, pp. 106, 110, 1928.

Original description.—"Male.—Moderately convex, black, entire surface finely alutaceous and dull, the head and prothorax a little less so than the elytra. Scape of antennae very nearly twice as long as the funicle, the latter ⅔ as long as the club; first funicular joint as long as the next two, sixth slightly acutely produced inward; first two joints of club subequal and about twice as wide as long, last joint nearly as long as wide. Mandibles small. Head coarsely densely punctured and sparsely hairy. Prothorax ½ wider than long, widest at or just before the basal third, where it is strongly rounded but not angulate; sides feebly arcuate and strongly convergent anteriorly, still more rapidly converging to the deep sinuation before the basal angles which are sharply defined, a little acute and everted; surface densely but not coarsely punctate laterally, less densely but still closely and a little irregularly toward the middle, a narrow median incomplete impunctate line; lateral margin flattened at the point of greatest width, narrowing before and behind. Elytra very little wider than, and not quite as long as the prothorax, 1⅔ time as long as wide, subparallel, striae represented by unimpressed series of very fine punctures, which are scarcely distinguishable from those of the intervals and are in great part confused with them. Legs rather slender, the hind tarsi about ⅘ as long as the tibiae."

"Female.—Large and more convex than the male, the elytra a little more arcuate at sides; antennal funicle very slightly shorter than the club, the first two joints of the latter more strongly transverse; hind tarsi ½ the length of the tibiae. Length, ♂, 8.5–10 mm.; ♀, 10.5–12.5 mm. Width, ♂, 3.5–4.1 mm.; ♀, 4.8–5.5 mm. California: Clear Creek (June 5–12) and South Fork of Kaweah River (Jan. 28–30)."

[90a] This Collection at the present time is the largest collection of Lucanidae extant in the Americas.

Type No. 24741 in the Museum of Comparative Zoölogy, Cambridge, Massachusetts. Approximately 70 examples were studied, and 10 dissected (9 ♂♂, 1 ♀); measurements of the material (from Benesh collection) vary from 8.9 to 11.0 mm., ♂♂; 11.8 mm., ♀. In external appearance allied to *latus,* but readily separable by its finer puncturation, opaque aspect, as well as by a narrow median impunctate area extending from base to disk of pronotum; females resemble closely the large form of *agassizi* (= *californicus*), distinguished therefrom by deep purple lateral margins of prothorax.

Distribution.—California. Precise localities:

Brownsville, V, 1935, (K. L. Maehler), [J. W. Angell]; Cedar Creek, (Tulare Co.), (R. Hopping); Clear Creek, (R. Hopping); Fresno County; Sequoia National Park, (Paradise Valley), Alt. 3–5000′, 1929, V, 19, 1930, [J. W. Angell]; South Fork of Kaweah River, (R. Hopping), [Mus. of Comp. Zoölogy].

Platyceroides latus (Fall) (Pl. VIII, figs. 56, 57 a to e.)

Platycerus latus Fall, Canadian Entmologist, xxxiii, 291, 1901. Van Dyke, Pan-Pacific Ent., iv, pp. 106, 110, 1928.

Original description.—"Stout, convex, nearly black, shining. Head small, coarsely confluently punctured; mandibles small, not differing in the sexes. Scape of antennae nearly twice as long as the funicle, the latter slightly but distinctly shorter than the club; funicular joints, except the first, transverse, the outer ones gradually slightly wider; club three-jointed, distinctly wider in the male than in the female, its basal joint more than twice as wide as the preceding one. Prothorax large, one-half to four-fifths wider than long, widest but little behind the middle, sides strongly rounded but not angulate, deeply sinuate posteriorly, the hind angles right or somewhat acute; side margins moderately reflexed; disc closely and strongly punctate, the punctures less close toward the middle, where they are separated by from one-half to quite their own diameters. Elytra from one-third to two-fifths longer than wide, distinctly more than twice as long as the prothorax, width at base a trifle less than the latter at its widest part; disc not distinctly striate, the punctures strong, close and subserial in arrangement. Tarsi about three-fourths as long as the tibiae in the male, scarcely more than half the tibial length in the female. Length, 9–11 mm. California: Alameda and Placer Counties."

Type No. 24740 in the Museum of Comparative Zoölogy, Cambridge, Massachusetts.

About 50 examples were studied, the greater part represented by females; the measurements are: 9.2–9.9 mm., ♂; 10.2–11.7 mm., ♀. Morphologically diverging from *opacus* by the distinctive genitalia (figs. 56, 57), which lack the lateral apophyses, supplanted by an internal sac, and the short, tubular flagellum.

Distribution.—California. Precise localities:

Alameda County; Alpine Co., (Bloods), Elev. 7000′, VII, 14, 1901; Brownsville, VII, 7, 1936, (K. L. Maehler), [J. W. Angell]; Calaveras Co., (Big Trees), IV, 18, 1941, Alt. 5000′; Eldorado Co., VI, 25, 1913, (F. W. Nunnenmacher), [J. W. Angell]; Nevada Co., (E. R. Leach), [B. Benesh]; Placer Co., (E. C. Van Dyke); Plumas Co., VI, 5, 1913, (F. W. Nunnenmacher), [J. W. Angell]; Riverton, VII, 4, 1934, (R. Wagner), [J. W. Angell]; Sugar Pine, VII, 25, 1920, (E. Schiffel), [J. W. Angell].

Platyceroides viriditinctus (Benesh) (Pl. IX, figs. 58 to 61.)

Platycerus viriditinctus Benesh, Entomological News, LIII, p. 222, 1942.

Original description.—"♂ Robust, convex, ebony black, nitid, dorsum with obscure greenish tinge; a member of the *agassizi* group, its nearest relative being *P. opacus* Fall, with which species it is compared throughout."

"Head transverse, twice as broad as long, anteriad nearly straight, anterolaterad angles rounded and feebly emarginate, canthus short and parallel, eyes fairly large, convex, base gently rounded; anteocular bosses prominent; cribrate-punctate (similar to *opacus*, but shallower and more clearly defined), punctuation becoming larger towards the base. Antennae short, fairly stout, with scape and funicle piceous, nitid; scape one-third the length of antenna, slightly bent; funicle six-segmented, sparsely setose, first segment pear-shaped, twice as long as the second; second globular and distinctly longer than the succeeding segment, third, fourth and fifth of equal length, dilated towards front, sixth as long as the fifth, twice as broad as long, produced anterad into a point; clava of three segments, longer than the funicle, spongiose, rufous, subopaque, first two segments of equal length, produced anterad into a lobe, ultimate segment irregular in outline and twice as long as the preceding segment. Mandibles sickle-shaped, simple."

"Pronotum nearly twice as broad as long, frontad hollowed, antero-lateral angles subacute (*opacus* more blunt), sides gently rounded to basal third (*opacus* more broadly arcuate), thence sinuous to the acuminate basal angles, base concave (*opacus* straight); punctuation cribriform (in *opacus* larger and closer), disc with a frontal median impression, lateral margins explanate and gently reflexed. Scutellum broader than long, apex rounded, base strongly punctured. Elytra nearly three times the length of pronotum, 5 mm. wide and 6.5 mm. long, basad ante-humeral area strongly depressed, humeri rounded, diverging to posterior third, thence gently rounded to apex, surface uneven, linearly punctulate (in *opacus* confused). Legs slender, black, nitid; tibiae with rows of golden setae; anterior tibiae distad with broad furcation and six unequal serrations; intermediate tibiae serrate the full length with eight serrations (*opacus* with two to three short, centrally situated spines), posterior tibiae with five feeble serrations (in *opacus* simple); [91] tarsi slender and as long as the tibiae, piceous, with short, ventral golden setae; claws large, simple. Beneath black, nitid, sparsely punctured throughout, with punctuation on abdominal segments finer and denser; mouth parts piceous, glabrous."

"Dimensions: length (with mandib.) 10.5 mm.; width (broadest part of elytra) 5 mm. Female unknown."

"Holotype: ♂, Stayton, Oregon, V, 3, 1941, in the writer's collection, accession number 5362. Paratopotype: 1 ♂, same data as holotype, in the cabinet of Mr. K. M. Fender, McMinnville, Oregon." [92]

Dissection of the type, subsequent to its description, proves *viriditinctus* a closer relative of *latus* than *opacus,* used for comparison. The genitalia (figs. 58, 59) are similar to *latus* in nearly every respect, differing chiefly by the robust, tri-lobate flagellum. The female, still desideratum, we may expect to resemble the Californian *latus* and, from analogous variations observed in its congeners, be broader than the male, with coarser lateral puncturation of the pronotum, and entirely black, without the green luster.

Platyceroides laticollis (Casey) (Pl. IX, figs. 65, 66 a to e.)

Platycerus laticollis Casey, Memoirs of the Coleoptera, v, p. 373, 1914. Van Dyke, Pan-Pacific Ent., IV, pp. 106, 110, 1928.

Original description.—"Hind body rather narrow, the color pale and uniform red-brown throughout the body and legs, the head darker basally, moderately shining, glabrous; head small, distinctly less than half as wide as the prothorax, the sides before the eyes obtusely sub-angulate and much more prominent than the latter, thence evenly oblique to the obtusely angulate and posteriorly prominent limits of the epistoma, the latter broadly, rather deeply sinuate; mandibles very small, stout, acute at tip and not dentate within; antennae with the stem slender, subglabrous, the club stout, parallel, 3-jointed, densely clothed with minute gray pubescence and barely as long as the basal joint of the stem; prothorax four-fifths wider than long, the sides prominently rounded distinctly behind the middle, thence broadly arcuate to the obtusely rounded moderately advanced apical angles and more rapidly converging and straighter to the basal angles, which are right and not rounded, the sides just before them feebly sinuate for a very short distance; base transverse, a third wider than the sinuate apex; surface deplanate at the sides, less broadly and more concavely basally; punctures rather strong, well separated, close apically and on the lateral convex slopes, coarser on the deplanate sides; elytra more than one-half longer than wide, much narrower than the prothorax, parallel, evenly rounded at apex, the punctures moderate, close-set in unimpressed series, which are alternately more widely and narrowly separated toward the suture, with the broader intervals flat, the narrower slightly convex, the former closely and confusedly punctate, the latter more finely and uni-seriately; toward the sides the surface is smoother and the punctuation more even; humeral angles obtuse, not prominent; anterior face of the anterior tibiae not at all punctate except at apex and having, behind the middle, a rounded and densely, decumbently golden-pubescent area; legs rather slender, the tarsi filiform, the posterior four-fifths as long as the tibiae. Length 9.3 mm.; width of elytral base 3.0 mm. Oregon (Mary's Peak)."

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[91] In *opacus* a spine is also found in the distal third of posterior tibiae.

[92] We are informed that the paratype is now in the Angell Collection.

A well defined species with conspicuously broad prothorax, much broader than the base of elytra, which are more or less parallel; the male antennae with club loosely knit, pubescent throughout, female on the contrary with club compact, bases of segments extremely finely punctulate, shining, with sensory area restricted to anterior face, as illustrated in figure 66-b, ultimate segment round, anterad pubescent.

The male genitalia (figs. 65, 66) readily separate it from any species thus far reviewed; the median strut is robust, without internal sac or lateral apophyses, and the whip-like, sclerotized flagellum is somewhat similar to *Platycerus,* which, however, has the flagellum membraneous or cartilaginous. The female approximates in habitus the male, but with sides of prothorax broadly arcuate to basal fourth and sinuous to posterior corner, which is right; brown or rufo-piceous; elytra posterad slightly more attenuate; genitalia (fig. 66-a) with styli inward bent and somewhat pointed, coxites broad at base, narrowing to middle, parallel to apex, which is truncate.

The measurements of a female, unique in the writers cabinet, in comparison with those of a male are as follows: length × width in millimeters.

	♂	♀[98]
Head (incl. mandib.)	1.2 × 2.07	1.1 × 1.9
Prothorax	2.4 × 4.2	2.5 × 3.7
Elytra	5.8 × 4.0	5.8 × 4.05
Humeri	3.5	3.3

Distribution.—Oregon. Precise localities:

Alsea, IV, 20, (W. J. Chamberlin); Lincoln Co., VI, 10, 1941, (F. W. Nunenmacher); Mary's Peak. In the collections of Angell, Benesh, Cornell University, Leach, Oregon State College, United States National Museum, apparently all, excepting the Casey type, from the captures of Nunenmacher and Leach.

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[98] From Mr. E. R. Leach, Piedmont, Cal., to whom thanks are due for the example, a desideratum of long standing.

PLATYCEROPSIS new genus

Platycerus Casey, Canadian Entmologist, xxiv, p. 153, 1895. Wickham, Can. Ent., xxxi, p. 23, 1899. Möllenkamp, Inter. Entomologische Zeitschrift, v, p. 302, 1912. Casey, Mem. of Coleop., v, p. 374, 1914. Angell, Bull. Brooklyn Ent. Soc., p. 22, 1917. Van Dyke, Pan-Pacific Ent., iv, pp. 107, 111, 1928.

Characters of the genus: obovate, strongly convex, not differing in the sexes; head small, nearly round, with distinct angular carina extending from the anteocular bosses to occiput; prothorax broader than long, lateral center broadly arcuate; elytra one-third longer than wide, and twice as long as prothorax, humeri obtusely angulate, apex broadly rounded, moderately coarsely subserially punctate, intervals subcostiform; legs of moderate length, stout, fossorial; tibiae triangular in cross-section, very stout; tarsi short, praetarsus as long as the fifth segment, 2nd, 3rd, 4th and 5th progressively developed and as long as broad; mouth parts differ from *Platyceroides* in having the galea and inner maxillary lobe (lacinia) obtusely rounded, of equal size, densely setose, and fringed brush-like with golden setae, as long as or equal in length to galea and maxillary lobe. ♂, wings atrophied, ♀, apterous. Designated genotype: *Platycerus keeni* Casey.

Platyceropsis keeni (Casey) (Pl. IX, figs. 62, 63 a to d, 64 a to b.)

Platycerus Keeni Casey, Can. Ent., xxvii, p. 153, 1895.
Platycerus pedicellaris Mollenkamp, Inter. Ent. Zeitschr., v, p. 302, 1912.

Casey (1895); original description: "Body stout, convex, polished, blackish-castaneous in color. Head small, coarsely and confluently punctate, two oblique subelevated areas on the occiput sub-impunctate; mandibles very small, the internal tooth[94] at the middle small and broadly triangular; antennae short, rufo-testaceous, the scape slightly longer than the funicle, the latter compact, the three outer joints increasing gradually in width but not prolonged; club short, abrupt, compact, not so long as the funicle, three-jointed, the first abruptly, more than twice as wide as the last joint of the funicle, more than twice as wide as long and a little wider than the second, third with a broad sensitive terminal button. Prothorax large, one-half wider than long, widest and narrowly rounded at the middle; sides feebly sinuate toward base, very strongly so when viewed sublaterally; apex broad, feebly sinuate, much narrower than the base and scarcely more than one-half as wide as the disk, the latter convex, coarsely sparsely punctate, the punctures closer near the apex, the surface rapidly declivous laterally, the side margins not reflexed. Scutellum well developed, densely punctate. Elytra scarcely one-third longer than wide and but slightly more than twice as long as the prothorax, at base equal in width to the disk of the latter; humeri exposed, obtusely angulate; apex very broadly rounded; disk sparsely, moderately coarsely punctate, the punctures uneven in arrangement, with scarcely any trace of punctured series, alternate intervals sub-costiform. Legs moderate in length, very stout; femora coarsely, sparsely punctate; tibiae triangular, very stout; coarsely, asperately punctate and seriated setose; tarsi short and stout, the posterior much shorter than the tibiae. Hypomera setose. Length, 12.5 mm.; width, 5.7 mm. Queen Charlotte Island."

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[94] Hardly discernible.

Platycerus pedicellaris; original description: "Weibchen 11 mm. lang. Männchen unbekannt. Vaterland: Californien.[95] In der Form gleicht dieses Weibchen *Platycerus oregonensis.* Auffallend sind sofort die ungewöhnlich kräftigen, starken Beine, deren Oberschenkel grob punktiert sind und gelbbraune Färbung haben. Die Unterschenkel sind am Gelenk schwarz, nach unten keulenartig verbreitet und überall mit feinen Härchen besetzt. Kopf sehr klein und stark punktiert. Halsschild gewölbt und auf dem Diskus etwas vertieft. Seitenränder bogig gerundet und nach der Schulter zu ausgebuchtet."

"Schulterecken treten bei dieser n. spec. nicht so scharf hervor wie bei den übrigen amerik. *Platycerus*-Arten. Die parallelseitigen Flügeldecken sind gestreift und die zwischen den Streifen liegenden Flachen punktiert, nach dem Apex zu stumpf zugerundet. Die Augen sind ganz one Kiel.[96] Vorderbeinschienen tragen 3–4 Zähnchen und die Tarsen sind äusserst zierlich. Das hohe halbkreisförmige Mentum ist grob punktiert. Die Fühler haben breiten dreigliedrigen Fächer. Die drei nachsten spitzen Gliede tragen ein längeres Härchen. Prosternum hat hohen schmalen Kiel zwischen den Hüften, Mesosternum schräg abfallend, grob punktiert. Das typischer Exemplar befindet sich im Deutschen Entomolog. National-Museum."

I have been able to ascertain by examination of the type of *pedicellaris* Möll., kindly lent to me by the late Dr. Walther Horn, that it is positively synonymous to *keeni* (Casey); Dr. Chapin, as usual, after comparing the types of *keeni* and *pedicellaris,* sent voluminous memoranda, which point out the differences between them. He notes that the type of *Platyceropsis keeni* (Casey) is a female from Queen Charlotte Island and of *P. pedicellaris* (Möll.) is a female from Humboldt Co., Cal., and gives following measurements in millimeters, taken with a sliding caliper:

	keeni	*pedicellaris*
Total length	13.5	10.5
Length of pronotum	3.4	2.7
Width, across eyes	2.4	2.1
Width, across middle of pronotum	5.0	4.0
Width, across humeri	5.3	4.4
Width, across apical third of elytra	5.7	4.7

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[95] Collected by F. W. Nunenmacher, Humboldt County, Cal.; perhaps purposely omitted to prevent others from obtaining specimens.

[96] Canthus does encroach on the eye (compare fig. 63-d).

From these notes we can note that both examples are of the same sex. *Pedicellaris* is smaller, with the head, pronotum and underparts noticeably lighter in color than the corresponding parts of *keeni.* The head of *pedicellaris* is less coarsely punctured but of the same outline and with the supra-antennal bosses about equally developed in the two specimens. The antennae are similar in the two except that the club segments of *keeni* appear to have shrunk so that the sensory surface of each segment is retracted within its chitinous capsular portion. The pronota are similar in outline, the punctures being a little less coarse and a little more dense in *pedicellaris.* The scutellum of *keeni* is coarsely and rather densely punctured, except along a narrow median line; that *pedicellaris* is impunctate except at base. The sculpture of the elytra of *keeni* is a little coarser than that of *pedicellaris.* The anterior tibiae of the two forms are similar, if a slight indication of wear is disregarded. Other legs and underparts are similar in the forms except for a slightly coarser punctation in *keeni.* Other specimens from Queen Charlotte Island agree much more closely in size and sculpture with the type of *pedicellaris* and this species would appear to be the same as *keeni* Casey.

Figures 62 and 63 depict the male genitalia, which are striking in comparison with those hitherto presented; its chief distinction is the robust median strut, with closely adhering lateral apophyses and the large, cartilaginous furcate flagellum or aedeagus. Figure 63-a clearly portrays the female genitalia, distinguished from the related *Platyceroides* by the coxites not being clearly separated, but basad united, with a deep median cleft, and narrow, approximate valvifers. Figures 63-b, c and d, represent respectively the antennae (♀), right side prothorax (♀), and the head (♂); as will be readily noted on the latter, ocular canthus encroaches deeply on the eye, nearly dividing exterior circumference in half. No sexual dimorphism is evident in the shapes of head, prothorax and elytra, nor their appendages; mandibles are alike in the sexes, robust and broader at base than in the species of *Platyceroides;* legs stouter; tibiae robust, fossorial, strongly indicating subterraneous existence; tarsi short and stouter in proportion to the species of *Platyceroides;* anterior tibiae strongly palmate, triangular in cross section, intermediate and posterior profusely covered by long, erect setae. As endemic to the genus *Platyceroides*, the female of *Platyceropsis* is apterous; the male, however, diverges from members of *Platyceroides*, which are fully winged and, judging from the wing area, good flyers, by atrophied wings (fig. 64), which when fully spread do not exceed the length of elytra (fig. 64-a).

The species varies in length from 9.8 to 12.2 mm.;[97] approximately 350 examples were used in this review and practically all the material was dissected as no satisfactory character, stable enough for absolute accuracy, could be discovered to separate the sexes. One specimen from Arcata, Humboldt County, California, in the Benesh collection, is notable for its finely granulate sculpture throughout, without the raised costiform ridges on the elytra.

Recorded by Van Dyke[98] to breed in "old alder and poplar logs which have been cast up by the storms." It must be quite common on Queen Charlotte Island, as the writer has seen long series of the species all labelled "Massett, Q. C. I., B. C., Canada."

Distribution.—British Columbia to Northern California. Precise localities:

BRITISH COLUMBIA: Massett, Queen Charlotte Island, (Jack Martin), [J. W. Angell]. CALIFORNIA: Arcata, Humboldt County, [B. Benesh]. OREGON: Cannon Beach, (Van Dyke); Gearhart, (Merton C. Lane), [J. W. Angell]; Neskowin, IV, 30, 1931, [J. W. Angell]; Portland, VI, 1936, [J. W. Angell]; Taft, IV, 19, 1935, (R. C. Rieder), [J. W. Angell]; Waldport, IV, 26, 1929, (R. Dominick), [J. W. Angell]. WASHINGTON: Moclips, IV, 6, 1913, [J. W. Angell]; Seaview, [M. H. Hatch].

EXPLANATION OF FIGURES

The scales A and B as cited in the explanations refer to the respective one millimeter equivalent lines given on each plate.

PLATE IV

Platycerus marginalis Casey

Fig. 1.—Egg. Scale A.

Platycerus oregonensis Westwood

Fig. 2.—Larva (last instar), [McMinnville, Oregon]. Scale as indicated.

Fig. 3.—Head of larva, anterior aspect. Scale B. a, left mandible, enlarged.

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[97] From material in the Benesh collection.

[98] Pan-Pacific Ent., IV, p. 111, 1928.

Fig. 4.—Posterior view of anal segment. Scale B.
Fig. 5.—Left side of prothorax of female. Scale B.
Fig. 6.—Antenna of female. Scale A.
Fig. 7.—Genitalia of female, ventral aspect (c, coxites; sty, styli; vf, valvifers). Scale A.
Fig. 8.—Genitalia of male, dorsal aspect. Scale A.
Fig. 9.—Genitalia of male, ventral aspect. Scale A.
Fig. 10.—Antenna of male. Scale A.
Fig. 11.—Left side of prothorax of male. Scale B.

Platycerus caraboides (Linnaeus)

Fig. 12.—Left wing of male with outline of *agassisi* wing (in broken line). Scale for 5 mm. as shown.
Fig. 13.—Mouth parts of male; a, labium; b, maxilla. Scale A.

PLATE V

Platycerus caraboides (Linnaeus)

Fig. 14.—Genitalia of male, dorsal aspect. Scale A.
Fig. 15.—Genitalia of male, lateral aspect. Scale A. After Sharp and Muir, 1912; a, lobal ridge; b, basal piece; c, cut off; ej, ejaculatory duct; fg, flagellum; is, internal sac; ll, lateral lobes; ml, median lobe; ms, median strut; pa, point of articulation; ts, tegminal strut.
Fig. 16.—Antenna of male. Scale A. Left side of prothorax. Scale B.
Fig. 17.—Antenna of female. Scale A. Right side of prothorax of female. Scale B. [Ziegelrodaer Forst, bei Rossleben.]
Fig. 18.—Genitalia of female; a, dorsal aspect; b, ventral aspect. Scale A.

Platycerus virescens (Fabricius)

Fig. 19.—Genitalia of male, dorsal aspect. Scale A.
Fig. 20.—Genitalia of male, ventral aspect. Scale A.
Fig. 21.—Mandibles of male; a, typical virescens; b, *peregrinus;* c, *securidens;* d, *quercus.* Scale B.
Fig. 22.—Mandibles of female; a, and b, left side of prothorax of male; c, right side of prothorax of female. Scale B.
Fig. 23.—Antenna of male. [No. Ill., B. Benesh.] Scale A.
Fig. 24.—Genitalia of female, ventral aspect. Scale A.

Platycerus delicatulus Lewis

Fig. 25.—Genitalia of female; a, dorsal aspect; b, ventral aspect; c, antenna of female. Scale A. d, right side of prothorax of female. Scale B. e, right anterior tibia of female. Scale A.

PLATE VI

Platycerus marginalis Casey

Fig. 26.—Right side of prothorax of male, a; left side of prothorax of female, b. Scale B.

Platycerus piceus (Kirby)

Fig. 27.—Left side of prothorax of male, a; right side of prothorax of female. Scale B.

Platycerus marginalis Casey

Fig. 28.—Antenna of male. Scale A.

Platycerus piceus (Kirby)

Fig. 29.—Antenna of male. Scale A.

Platycerus marginalis Casey

Fig. 30.—Head of male; a, dorsal aspect; b, lateral aspect. Scale B.

Platycerus piceus (Kirby)

Fig. 31.—Head of male, dorsal aspect. Scale B.

Platycerus marginalis subsp. *cribripennis*

Fig. 32.—Genitalia of female, ventral aspect. Scale A.
Fig. 33.—Right side of head of male; a, left side of prothorax of male. Scales A and B, respectively.

Platycerus piceus (Kirby)

Fig. 34.—Genitalia of female, ventral aspect. Scale A.

Platycerus marginalis Casey

Fig. 35.—Genitalia of female, ventral aspect. Scale A.
Fig. 36.—Genitalia of male, dorsal aspect. Scale A.
Fig. 37.—Genitalia of male, ventral aspect. Scale A.

Platycerus piceus (Kirby)

Fig. 38.—Genitalia of male, dorsal aspect. Scale A.
Fig. 39.—Genitalia of male, ventral aspect. Scale A.

PLATE VII

Platyceroides agassizi (Leconte)

Fig. 40.—Labium and left maxilla of male, dorsal aspect; a, labium; b, maxilla. Scale A.
Fig. 41.—Antenna of male; a, terminal segment of variant. Scale A.

Fig. 42.—Right side of prothorax of male; a, *pacificus*, b, *agassizi*. Scale B.
Fig. 43.—Genitalia of male, dorsal aspect. Scale A.
Fig. 44.—Genitalia of male, ventral aspect. Scale A. With insertion of tip of flagellum.
Fig. 45.—Left anterior tibiae of female.
Fig. 46.—Antenna of male and right side of prothorax of male and female (in broken lines) of subspecies *parvicollis*; antenna (scale A), sides of prothorax (scale B).
Fig. 47.—Antenna of female (= *californicus*); a, genitalia, ventral aspect.

Platyceroides thoracicus (Casey)

Fig. 48.—Genitalia of male, dorsal aspect [California]. Scale A.
Fig. 49.—Genitalia of male, ventral aspect. Scale A.
Fig. 50.—Genitalia of female, ventral aspect [Sta. Cruz Mts., Cal.]; antenna of female. Scales A. Right side of prothorax of female. Scale B.
Fig. 51.—Antenna and left side of prothorax of male. Scales A and B, respectively.

PLATE VIII

Platyceroides aeneus (Van Dyke)

Fig. 52.—Genitalia of male, dorsal aspect. Scale A.
Fig. 53.—Genitalia of male, ventral aspect. Scale A. a, antenna of male; b, left side of prothorax of male (scales A and B, respectively); c, genitalia of female, Washington Territory, ventral aspect. Scale A. d, antenna of female; e, right side of prothorax (scales A and B, respectively).

Platyceroides opacus (Fall)

Fig. 54.—Genitalia of male, dorsal aspect. Scale A.
Fig. 55.—Genitalia of male, ventral aspect. Scale A. a, antenna of male; b, left side of prothorax of male (scales A and B, respectively); c, genitalia of female [Sequoia Nat'l Park, Cal., 1929, alt. 2000–5000′], ventral aspect. Scale A. d, antenna of female; e, right side of prothorax (scales A and B, respectively).

Platyceroides latus (Fall)

Fig. 56.—Genitalia of male, dorsal aspect [Nevada Co., VI, 13, 1933]. Scale A.
Fig. 57.—Genitalia of male, ventral aspect. Scale A. a, antenna of male; b, left side of prothorax of male (scales A and B, respectively); c, genitalia of female, ventral aspect [Nevada Co., V, 9, 1932]. Scale A. d, antenna of female; e, right side of prothorax (scales A and B, respectively).

Plate IX

Platyceroides viriditinctus (Benesh)

Fig. 58.—Genitalia of male, dorsal aspect [Stayton, Oregon, V, 3, 1941]. Scale A.

Fig. 59.—Genitalia of male, ventral aspect. Scale A.

Fig. 60.—Antenna of male and right side of prothorax (scales A and B, respectively).

Fig. 61.—Left intermediate tibia of male. Scale A.

Platyceropsis keeni (Casey)

Fig. 62.—Genitalia of male, dorsal aspect [Massett, Q. C. I., B. C., Canada]. Scale A.

Fig. 63.—Genitalia of male, ventral aspect. Scale A. a, genitalia of female, ventral aspect. Scale A. b, antenna of female. Scale A. c, right side of prothorax of female. Scale B. d, right side of head of male. Scale A.

Fig. 64.—Left wing of male; a, length of elytron; b, 5 mm. scale for comparison.

Platyceroides laticollis (Casey)

Fig. 65.—Genitalia of male, dorsal aspect [Lincoln Co., Oregon, V, 10, 1941, E. R. Leach]. Scale A.

Fig. 66.—Genitalia of male, ventral aspect. Scale A. a, genitalia of female, ventral aspect [Lincoln Co., Oregon, VI, 10, 1941, F. W. Nunenmacher]. Scale A. b, antenna of female; c, right side of prothorax of female (scales A and B, respectively); d, antenna and right side of prothorax of male (scales A and B, respectively).

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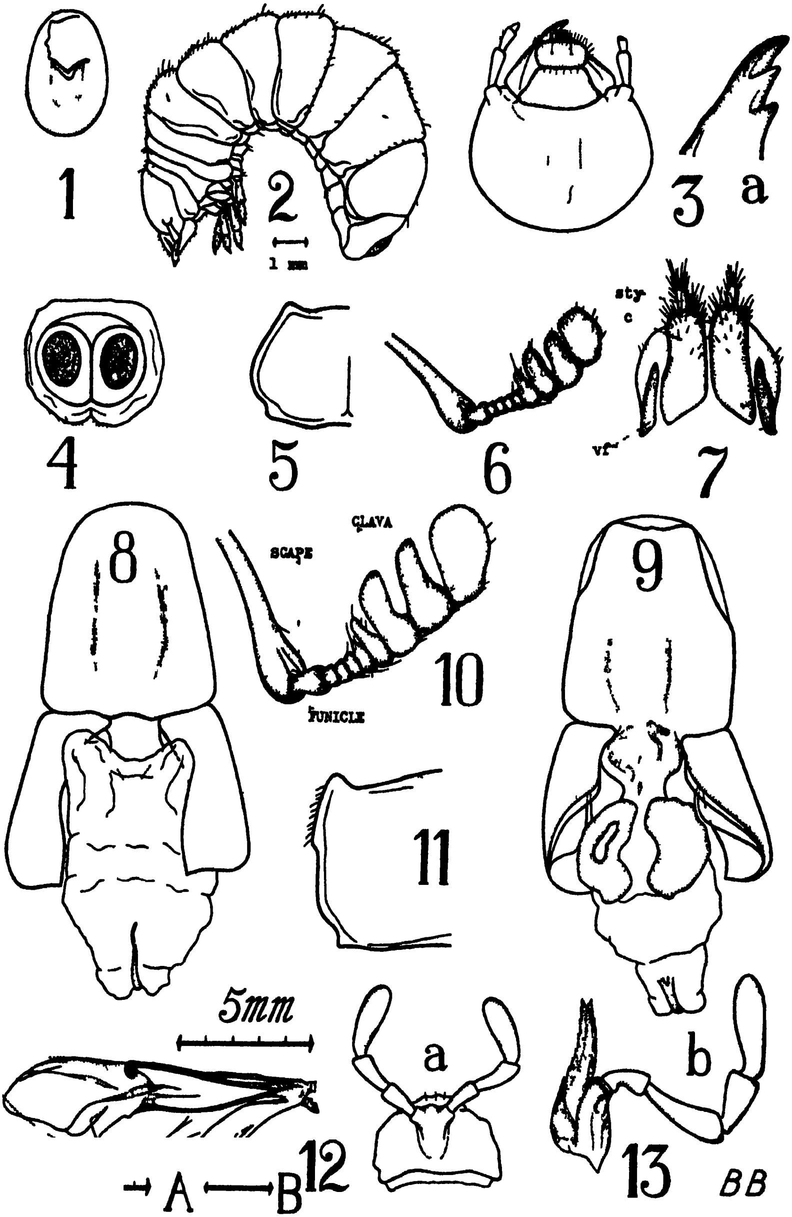
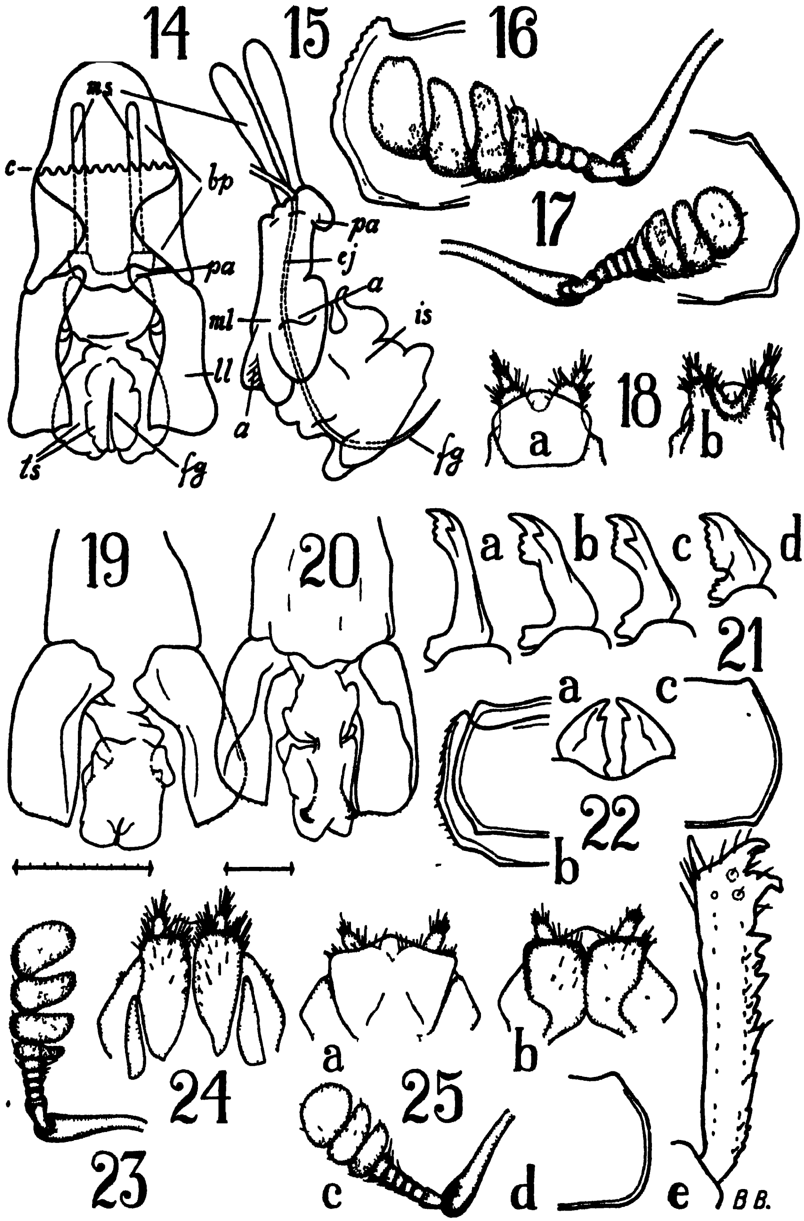


BENESH—REVIEW OF GENUS PLATYCERUS



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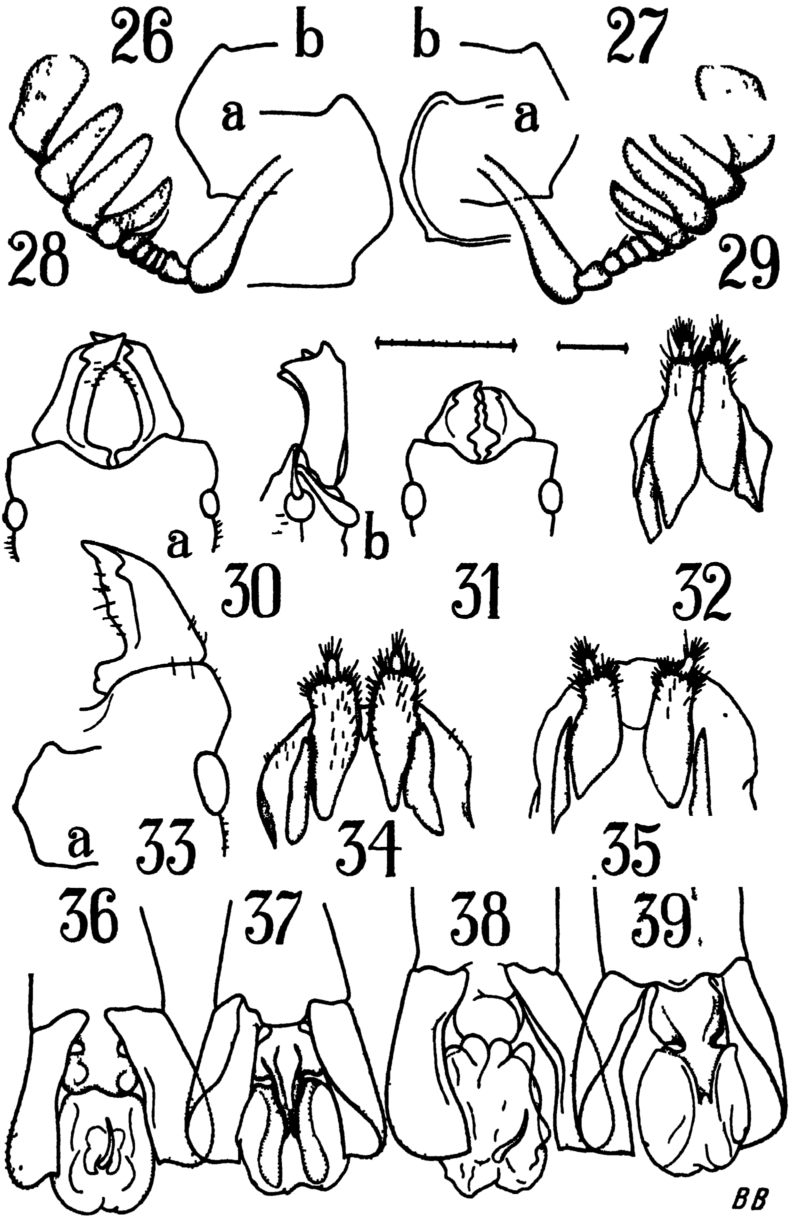

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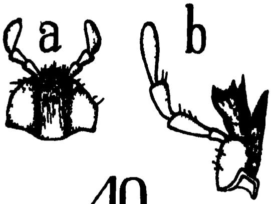

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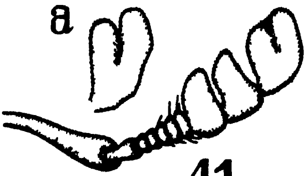

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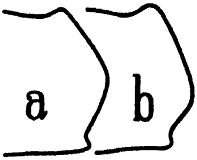

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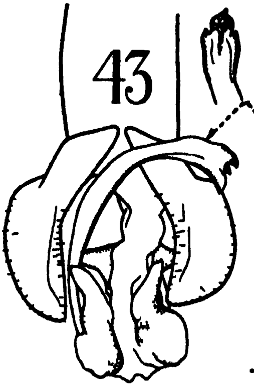

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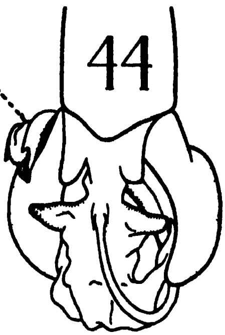

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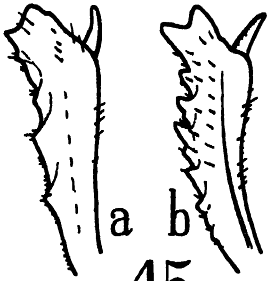

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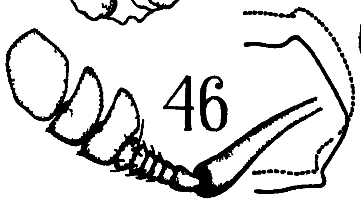

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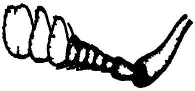

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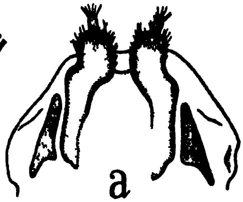

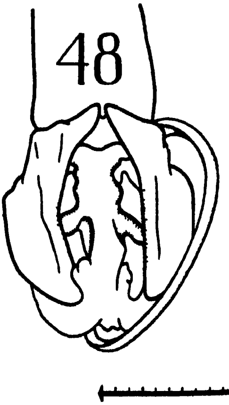

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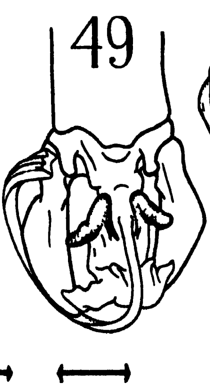

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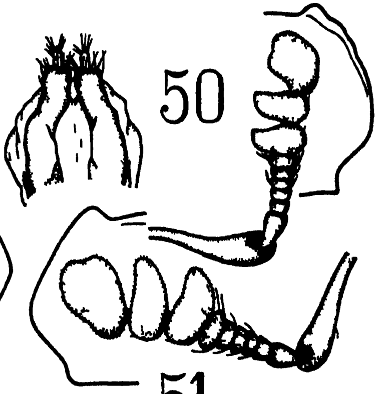

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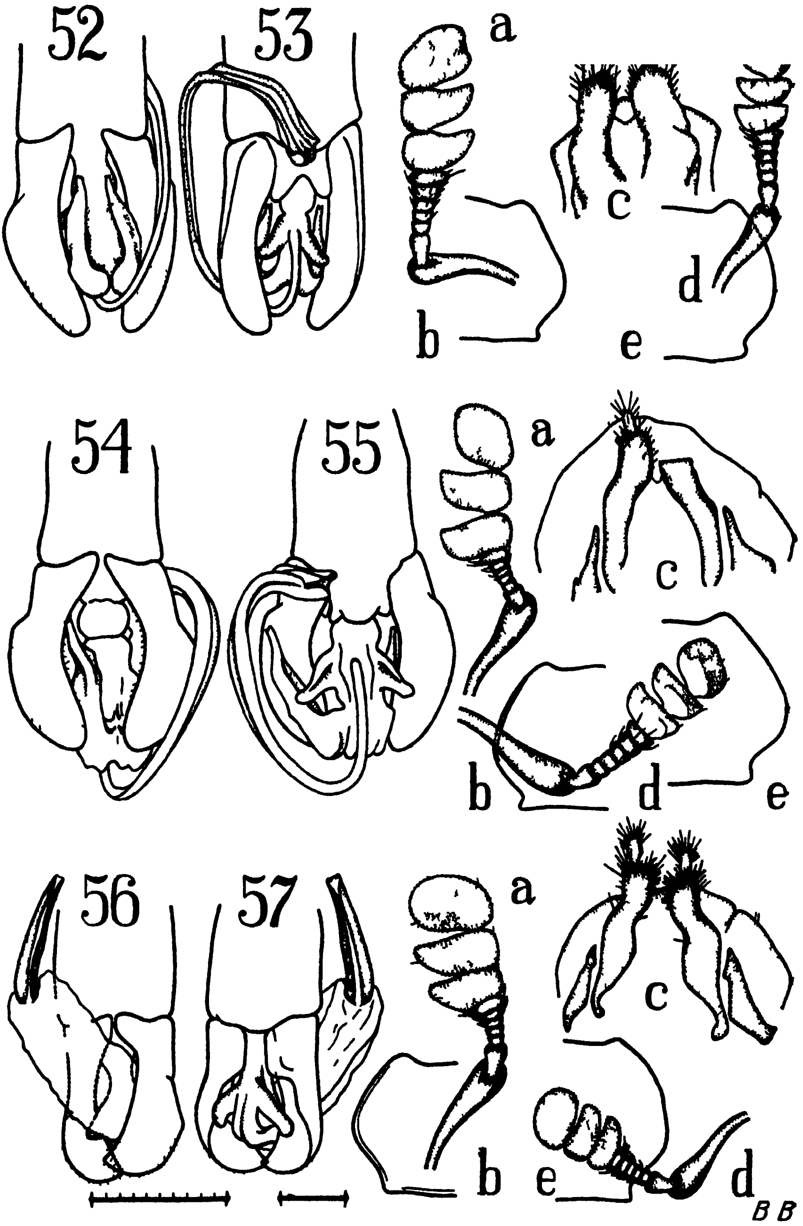
BENESH—REVIEW OF GENUS PLATYCERUS



BENESH—REVIEW OF GENUS PLATYCERUS

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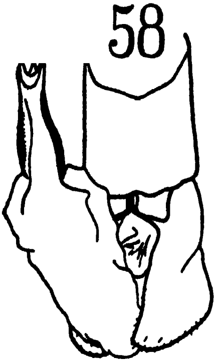

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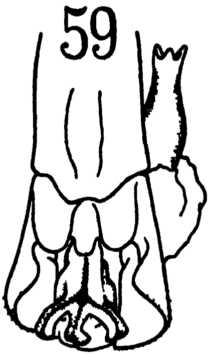

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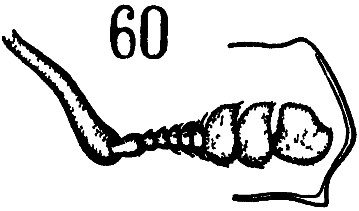

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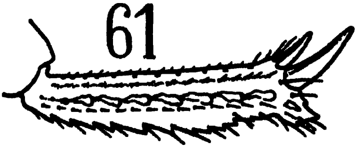

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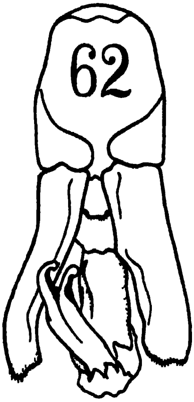

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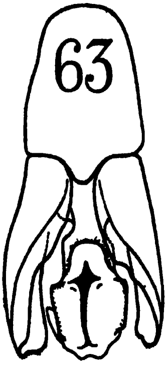

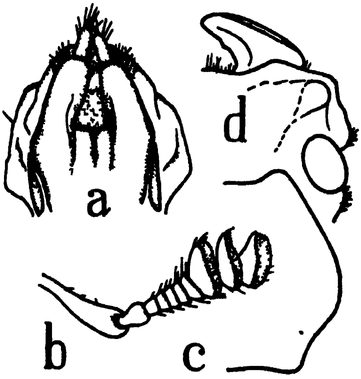

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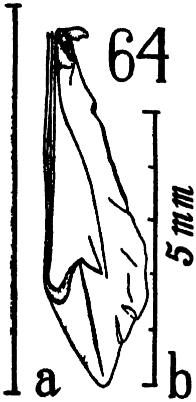

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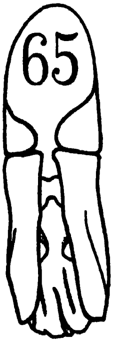

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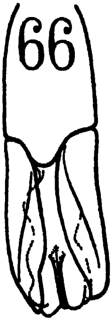

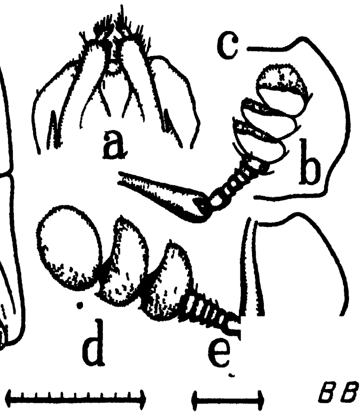

BENESH—REVIEW OF GENUS PLATYCERUS

THE ORIENTAL SPECIES OF THE AEDES (FINLAYA) KOCHI GROUP (DIPTERA: CULICIDAE)[1]

BY KENNETH L. KNIGHT, LT. CMDR., H(S), USNR
AND
JEAN L. LAFFOON, PHM. 1/C, USNR

(Plates 10 to 12)

Edwards (1932) placed all of the species of *Finlaya* having the following characters into what he designated as "Group A (*kochi* group: *Finlaya* s. str.)": spotted wings; scales of vertex, scutellum, and posterior pronotal lobe almost all broad and flat; femora and tibiae with numerous light spots and rings; tarsal segments with basal white rings; and sternites with scale tufts.

Stone and Bohart (1944), in their comprehensive treatment of the *kochi* group, point out that all the known larvae have characteristic stellate hairs on the thorax and abdomen; and that it is likely that all the species of the group pass the larval stage in water collected in plants.

At the present time, this group contains the following nine described species: *aranctanus* (Banks), *avistyla* Brug, *flavipennis* (Giles), *knighti* Stone and Bohart (Solomon Islands),[2] *kochi* (Doenitz) (Queensland, New Guinea), *poicilia* (Theobald), *samoanus* (Gruenberg) (Samoa, Tonga), *solomonis* Stone and Bohart (Solomon Islands), and *wallacei* Edwards (New Ireland, New Guinea).

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[1] This is the fourth paper of a series prepared on collections made in the Philippine Islands under the auspices of U. S. Naval Medical Research Unit No. 2. (Laffoon, Jour. Wash. Acad. Sci., xxxvi, 228–245, 29 figs.—Knight & Rozeboom, Proc. Biol. Soc. Wash., lix, 83–88, 23 figs.—Knight, Jour. Wash. Acad. Sci., xxxvi, 270–280, 20 figs.) The material was worked up in space furnished by the Division of Insects, U. S. National Museum. Additional specimens were made available from the U.S.N.M. through the courtesy of Dr. Alan Stone, and from the Academy of Natural Sciences of Philadelphia through the kindness of Dr. H. R. Roberts.

[2] Those species with distribution listed are all Australasian, and are not treated in this paper.

The species *gani* Bonne-Wepster (1940) (Dutch New Guinea) is a *Finlaya* with spotted wings, but it differs markedly from the members of the *kochi* group in having a sharply formed scutal pattern, narrow curved scales on posterior pronotal lobe, some tarsal segments with basal and apical spotting, sternites without scale tufts, and no scale tufts on the basistyle. This species was bred from *Nepenthes*.

Four new species of the *kochi* group are described in this paper, all from the Philippine Islands.

The adults of the black, yellow, and white Australasian species (*knighti, solomonis,* and *wallacei*) differ externally from the species with that coloration of the Oriental Region (*aranetanus, flavipennis, avistyla,*[8] *croceus* new species, *stonei* new species, and *medleri* new species) by possessing a prominent lateroventral tuft of outstanding scales at the apex of the fore femur. By male genitalia, *solomonis* and *wallacei* are distinct from the Oriental species in the presence of 1–2 specialized setae on the inner basal portion of the basistyle. However, the genitalia of *knighti* is very similar to that of *stonei,* differing slightly in the form of the dististyle (the adults differ externally in that *knighti* lacks the sternopleural line of broad white scales characteristic of *stonei*). The larvae of *solomonis* and *wallacei* (unknown for *knighti*) are distinct from the Oriental species in possessing a stout paired basolateral denticle on the caudal comb teeth.

The adults of the black and white Australasian species (*kochi* and *samoanus*) differ externally from the Oriental species (*poicilia* and *ananae* new species) in possessing a distinct lateroventral tuft of outstanding scales at the apex of the hind femur. The male genitalia of the Australasian species differ in possessing a prominent bent specialized seta on the inner basal portion of the basistyle. The larvae of *kochi* and *samoanus* differ from those of *ananae* by having head hair 4 sparsely branched (about 3–7), and from those of *poicilia* in having the meso- and metathoracic pleural hair 11 slender stellate in type and with 2–4 branches.

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[8] No specimens of this species were available for study; so, it is possible that not all the remarks of this paragraph will apply to it. Also, because of the incompleteness of the description of *avistyla,* it was found impossible to include it in any of the keys prepared for this paper.

Unless otherwise specified, paratypes of the new species described here are to be deposited in the U.S.N.M., British Museum of Natural History, the Academy of Natural Sciences of Philadelphia, the California Academy of Sciences, and at Johns Hopkins University.

Explanation of Symbols

apn = anterior pronotal lobe (prothoracic lobe) of adult.
ppn = posterior pronotal lobe (proepimeron) of adult.
lh = lateral hair of anal plate of larva.
isc = inner (submedian dorsal) caudal hair of anal segment of larva.

Key to the Adults

1. Species with yellow, white, and black scaling........................2
   Species with black and white scaling............................ 6
2. Prealar scale patch connected to the dorsal sternopleural patch by a narrow line of broad white scales, from the anterior margin of the dorsal sternopleural patch a similar line extends ventrally and posteriorly to the medial posterior sternopleural scale patch (fig. 2); on abdominal tergites III–VII, the lateral line of white scales curves dorsally just before the apex; larger claw of fore and mid male tarsi with a single basal tooth.......................................**stonei** new species
   The dorsal sternopleural patch of scales not connected to the prealar area with a line of scales, nor is there a line extending ventrally and posteriorly (fig. 1); on tergites III–IV, the lateral line of white scales curves dorsally at the apical margin; larger claw of fore and mid male tarsi bidentate..3
3. Male with pale hairs scattered over the dorsal aspect of most of the abdominal tergites; female tergites with pale hairs numerous basally and apically so that there appears to be a thick fringe of them at the junction of the tergites (proboscis nearly always without apicoventral black scales).......................................**flavipennis** (Giles)
   Male with pale hairs of tergites confined to lateral and apical margins; female tergites with only a sparse row of pale hairs at the junction of the tergites....................... 4
4. No apicoventral black scales present on the proboscis (rarely a few scattered ones); basistyle without a tergal subapical scale tuft (can be determined without separating and mounting the genitalia); (laterodorsal margins of abdominal tergites II–IV of female dark scaled, or with yellow scaling present as spots or irregular marks only, not as longitudinal markings; *ppn* with few black scales, or none).
   croceus new species
   Proboscis with a patch of apicoventral dark scales; basistyle with a tergal subapical elongate scale tuft (in addition to the usual inner median sternally-projecting tuft)..5

5. Proboscis of male largely dark scaled laterally and ventrally, except for a median pale band; subapical scale tuft of basistyle dusky (can be determined without mounting the genitalia); laterodorsal margins of abdominal tergites II–IV of female with yellow scaling present as spots or irregular marks only.................... **medleri** new species

   Proboscis of male with considerable pale scaling laterally and ventrally; subapical scale tuft of basistyle largely pale yellow; laterodorsal margins of abdominal tergites II–IV of female with longitudinal streaks of yellow scaling................................ **aranetanus** (Banks)

6. Lateral scutellar lobes covered with broad appressed scales, these white except for a few apical dark ones; segment I of fore tarsus with some basal white scales.............................. **poicilia** (Theobald)

   Lateral scutellar lobes with narrow curved yellowish scales; segment I of fore tarsus without basal white scales........... **ananae** new species

Key to the Male Genitalia

1. Basistyle with an elongate subapical tergal scale tuft, in addition to the inner median scale tuft (fig. 10)..................................2

   Basistyle with only an inner median scale tuft (fig. 3)..................3

2. Subapical scale tuft of basistyle yellow (this is best determined grossly, before the genitalia is removed), extending well beyond apex of basistyle, coming near to the subapical prolongation of the dististyle **aranetanus** (Banks)

   Subapical scale tuft of basistyle dusky, extending only a short distance beyond the apex of the basistyle (fig. 10).......... **medleri** new species

3. Tergal margin of basistyle with a small subapical group of greatly elongate setae, and a median longitudinal row or 2–4 even longer setae (fig. 7)
   croceus new species
   flavipennis (Giles)

   Tergal margin of basistyle without a subapical group of greatly elongate setae, nor with a median longitudinal row of elongate setae (fig. 3)...4

4. Claspette blade with a greatly broadened membranous portion (fig. 8) **stonei** new species

   Claspette blade slender and without a greatly broadened membranous portion (fig. 6)..5

5. Dististyle distinctly swollen beyond the middle; inner tergal margin of basistyle with only a narrow band of setae, not reaching dorsally and laterally to the clothing scales (fig. 5)............. **ananae** new species

   Dististyle slightly swollen medially; inner tergal margin of basistyle with a broad band of setae, extending dorsally and laterally to the clothing scales (fig. 4)................................ **poicilia** (Theobald)

Key to the Larvae

1. Head hair 1 (preclypeal spine) with at least 2 branches (rarely single in *poicilia*); prothoracic hair 0 very large, stellate, with at least 9 branches; basal hair of ventrolateral siphon valve always distinctly longer than diameter of siphon at apex (fig. 31); margin of anal plate ventral to *lh* with large spines (fig. 33)............................2
   Head hair 1 single; prothoracic hair 0 very small, with not more than 5 branches (fig. 24); none of the siphonal valve hairs as long as diameter of siphon at apex (fig. 32); no spines ventral to *lh* on margin of anal segment (fig. 29)...4
2. Mandible with a large dark tooth anterior to the longest tooth (fig. 25); scales in distal row of comb patch without a pair of distinct lateral denticles near base (fig. 31); (hair 11 of meso- and metathoracic pleural groups short, weak, 2-4-branched)..................**stonei** new species
   Mandible without a large dark tooth anterior to the longest tooth (fig. 26); scales in distal row of comb patch with a paired basolateral denticle (fig. 34)...3
3. Head hair 1 with 3-4 branches; head hair 4 candelabra-like, with 11 or more branches (fig. 28); hair 11 of meso- and metathoracic pleural groups prominently stellate, with many branches....**ananae** new species
   Head hair 1 double, head hair 4 with 3-7 branches (fig. 27); hair 11 of meso- and metathoracic pleural groups single, stoutly spinose, short **poicilia** (Theobald)
4. Hair 11 of meso- and metathoracic pleural groups single, fairly long, stout, spinose (fig. 23); head hair 7 with 2-3 branches....**flavipennis** (Giles) **croceus** new species
   Hair 11 of meso- and metathoracic pleural groups very short, slender, single or double, not spinose (fig. 22); head hair 7 with 5-7 branches..5
5. Siphon and anal plate very dark brown (fig. 30)....**aranetanus** (Banks)
   Siphon and anal plate pale yellow (fig. 29) ....**medleri** new species

Key to the Pupae (from mounted pupal skins)

1. Hair 1 of abdominal segments III-VI hairlike, not enlarged into a prominent spine (fig. 13); paddle midrib extends nearly to caudal margin (fig. 13).. .2
   Hair 1 of abdominal segments III-VI developed into a prominent spine (fig. 14); paddle midrib not extending beyond midpoint of paddle 4
2. Metathorax without a distinctive pigmentation pattern (fig. 13) **stonei** new species
   Metathorax with 1-2 large sharply contrasting clear areas present (fig. 19)...3
3. Metathorax with 2 large clear lateral spots (fig. 19); hair 14 of abdominal segment VII smaller than hair 1 and located as shown in fig. 17...**poicilia** (Theobald)

Metathorax with one large clear lateral spot (fig. 20); hair 14 of abdominal segment VII subequal in size to hair 1 and located as shown in fig. 18.......................................**ananae** new species

4. Hair 3 of abdominal segment II present on the dorsolateral margin (in a flattened pupal skin) (as in fig. 13)..............**aranetanus** (Banks)
medleri new species

Hair 3 of abdominal segment II present on the ventrolateral margin (fig. 21)..5

5. Hair 1 of abdominal segment IV is 1.2–1.4 times longer than that of segment III....................................**flavipennis** (Giles)

Hair 1 of abdominal segment IV is 1.8–2.5 times longer than that of segment III....................................**croceus** new species

Aedes (Finlaya) stonei new species (Pl. X, figs. 2, 3 and 8; pl. XI, figs. 13, 16 and 25; pl. XII, fig. 31.)

MALE.—Wing, 2.5–2.9 mm. *Head.*—Proboscis approximately equal to the front femur in length; yellow scaled, nearly basal half with 2 ventral rows of outstanding black scales (the most apical scales are yellow), ventroapical one-fourth largely black scaled, may be some scattered black scales dorsally and laterally. Palpus slightly longer than the proboscis; spotted and banded with black, yellow and white. Torus brown, a patch of small broad yellow scales on inner side; antennal plumose hairs pale golden, the 2 most apical tufts dark basally. Median area of vertex with mixed pale narrow, narrow curved, broad appressed, and forked upright scales; a submedian area of mixed broad and upright forked dark scales; remainder with broad pale scales; a line of forked uprights on the nape, dark medially and pale laterally.

Thorax.—Scutal integument dark; covered with a variegated pattern of narrow curved yellow, white and brown scales. Lateral scutellar lobes with broad black scales, a few broad yellow ones mesally, mid lobe with broad dark scales surrounded by mixed narrow and broad yellow scales. *Apn* with broad pale scales, some elongate pale scales ventrally; *ppn* with broad appressed mixed yellow, white and black scales, the black scales forming a medial patch, a ventral patch of elongate broadened white scales. Pleuron (fig. 2) dark; no lower mesepimeral bristles; a patch of broad white scales on each of the following areas: propleuron, lower portion of postspiracular area, paratergite, prealar area, dorsal sternopleuron, and medial posterior sternopleuron; a sharp line of broad white scales extends from the prealar region to the dorsal sternopleural scale patch, from this scale patch a forked line of scales extends posteriorly across the mesepimeron, also from the anterior margin of the dorsal sternopleural scale patch a line of scales connects ventrally and posteriorly to the medial posterior patch. Coxae with broad white scales, a patch of broad black scales ventrally on I and II. Femora and tibiae spotted and banded with white, yellow, and dark scales; apices of femora without prominent tufts of outstanding scales. Segment I of tarsi mottled or banded with yellow and black, basally and apically banded with white on the hind leg; II–IV yellow with narrow basal black bands, II–III of the hind tarsi may be spotted with black and apically banded with white; V yellow; ventral aspect of fore and mid tarsi all yellow, of hind tarsus yellow with narrow subbasal dark markings on I, narrow basal dark bands on II–IV; claws of fore and mid tarsi unequal, each unidentate, the tooth of the larger claw basal, hind tarsal claws equal and simple. Wing veins elaborately spotted with black, white, and yellow broad scales, a white costal spot just beyond middle, veins 1 and 5 white basally, vein 1 with 3 additional white spots; fork of vein 4 considerably basad to that of 2. Halter all yellow.

Abdomen.—Tergites with closely overlapping yellow scales, abundant yellow setae along lateral and apical margins, a broad median longitudinal dark scaled band extending caudally from the middle of I, broken at apex of most segments by a line of pale scales, this band may be reduced to scattered dark scales medially on the tergites, extreme lateral margins with a line of white scales, usually followed mesally by some dark scales. Sternites yellow scaled, lateral and apical bands of dark scales on IV–VII, VI–VII with an additional lateral white line, the apical black scales outstanding on IV–VII.

Genitalia (figs. 3 and 8).—Basistyle densely clothed with mixed yellow and black scales; membranous inner surface bears a dense cluster of yellowish stout setae and a clump of broad, acutely-tipped dusky scales; inner tergal surface with a broad dense band of long curved setae that extends dorsolaterally to the clothing scales, the more basal of these distinctly flattened and broadened. Diststyle swollen beyond middle, narrowed near apex, appendage about 0.5 as long as the diststyle. Claspette blade with apex rounded and decurved. Lobes of 9th tergite completely divided, each lobe with 3 stout setae.

One specimen has been seen which has the median setae of the inner tergal portion of the basistyle reduced in number and length. These genitalia also have but 1 seta on each lobe of the 9th tergite.

FEMALE.—Differs from male chiefly as follows: Proboscis with apicoventral dark scale patch reduced or absent. Palpus about one-third as long as the proboscis; black and yellow scaled, apex pale. Tarsal claws equal, each with a median tooth on fore and mid legs, simple on the hind legs. Tergites dark scaled (I usually all pale), spotted with pale scales medially, apical margin of segments with a line of yellow scales, lateral margin with a line of white scales, on II–VII this line bends briefly medially just before the apical margin, a sublateral longitudinal yellow fine or broken streak present on the more basal segments, VIII largely pale.

LARVA.—*Head.*—Hair 1 with 2–3 (usually 3) equal branches; 4 with 5–10; 5 with 1–2 (usually 2); 6 with 2–3; 7 with 6–11; 8 with 2–3; 9 with 3–4; 11 double (occasionally single), inserted approximately at the middle of antennal shaft; 12 with 7–11 (stellate); 13 with 1–2; 14 single; 15 single; 17 with 14–18 (stellate); 18 with 12–20 (stellate); 20 with 3–5. Median mouthbrush hairs with prominent comblike tips. Mandible with a large dark tooth anterior to the longest tooth (fig. 25). Mentum with 11–12 teeth on each side.

Thorax.—Prothoracic hair 0 (posterior and lateral to the submedian group, 1–3) stellate, with 16–21 branches. Pleural groups of II and III with hair 9 prominently branched, long; 10 very long, stout, single; 11 very short, slender, with 2–4 stiff branches; 12 on II similar to hair 10, but on III slender, about 3 times length of hair 11.

Abdomen (fig. 31).—Some dorsal and ventral hairs prominently stellate, apices forked, with 16–21 branches. Main lateral hair of I–II with 7–9 branches, of III–VI with 3. Pentad hair 1 with 15–20 branches, 2 and 4 single, 3 with 4–7, 5 with 7–12. Comb scales approximately 100 in number, those in distal row much longer than the others, apices enlarged and bearing a delicate fringe. Siphon pale yellow; densely covered with fine pale hairs; index 3.5–4.0; acus indistinguishable (probably due to the extremely pale nature of the sclerotized portions); hair tuft with 4–6 branches; 4–10 pecten teeth, teeth long and narrow, sometimes a delicate fringe visible; hair of ventrolateral valve (basal hair) and of dorsolateral valves each single, about 1.2–2.0 times diameter of siphon apex in length. Anal plate pale, very hairy, numerous long-fringed spines on posterior margin, many of these ventral to *lh*; *lh* with 3 branches; *isc* with 6–8. Ventral brush composed of 10 tufts, arising from a weakly sclerotized barred area, each tuft 1–5 branched (at a considerable distance from base). Anal gills tapering, tips rounded, dorsal pair 2.0–2.5 times longer than anal plate; ventral pair distinctly shorter than dorsal pair.

PUPA (figs. 13 and 16).—See pupal key.

TYPES.—*Holotype*.—Male (U.S.N.M., Cat. No. 58018), Ducong (inland on Basey River in Basey Municipality), Samar Island, Philippines, May 8, 1945 (E. S. Zolik), reared from banana axil.

Paratypes.—Two females with associated larval and pupal skins, 5 larval skins, same data as for holotype; 1 male, 2 females, 3 larvae, Osmena,[4] Samar, July 14, 1945 (K. L. Knight and Jean L. Laffoon), reared from pandanus axils; 1 male, Osmena, Samar, July 26, 1945 (Jean L. Laffoon), reared from taro axil; 1 larva, Osmena, Samar, elev. approximately 1,000 feet, July 31, 1945 (Jean L. Laffoon), reared from axil of abaca-type plant; 1 male, 1 female, Mt. Lobi, Dagami, Leyte, elev. approximately 1,000 feet, August 14, 1945 (H. R. Roberts, K. L. Knight), reared from abaca axil. Paratypes deposited in U.S.N.M. and the Acad. of Nat. Sci. of Philadelphia.

Remarks.—*Aedes stonei* is distinct from all the Oriental members (? *avistyla*) of the *kochi* group on the basis of the adult pleural scale pattern. It seems to be most closely related to *knighti*.

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[4] There are 5 villages on the island of Samar that bear the name of Osmena. The one referred to so frequently in this, and in the previous papers of this series is in the municipality of Basey and lies at Lat. 11°11.7′ and Long. 125°11.3′.

This species is dedicated to Dr. Alan Stone, who has contributed so much to the study of mosquitoes.

Aedes (Finlaya) medleri new species [5]

(Pl. X, figs. 1, 10 and 12; pl. XI, figs. 14, 22 and 24; pl. XII, fig. 29.)

MALE.—Wing 2.7–3.0 mm. Similar to *stonei*, but differing chiefly as follows: proboscis largely black scaled, a rather definite median band of yellow scales, a variable amount of yellow scales scattered over the proboscis throughout the black scales, these largely confined to the dorsal aspect however. Antennal plumose hairs dusky. Pale narrow and narrow curved scales of vertex confined to the median line and to the nape, a band of mixed pale broad appressed and forked uprights between this and the submedian dark scaled area. Pleural scale patches as in *stonei* except that the lines of scales extending dorsally and ventrally from the dorsal sternopleural patch are absent (fig. 1). Claws of fore and mid tarsi unequal, the larger claw bidentate (one tooth basal), the smaller unidentate. Halter pale, knob usually with some dark scales.

Genitalia (figs. 10 and 12).—Basistyle densely clothed with black scales tergally and yellow scales sternally; membranous inner surface bears a median dense cluster of yellowish stout setae and a clump of broad acutely tipped dusky scales; inner tergal aspect with a line of setae along the inner margin, increasing basally into a large clump of setae; tergal aspect with a dense clump of elongate bluntly tipped dusky scales at apical one-third (these extend only a short distance beyond tip of basistyle), and a line of 4–6 long prominent setae (setae and rings not uniform in size) at basal one-third. Dististyle swollen to apical one-third, being produced at this point into an acute lateral projection; appendage about 0.5 as long as dististyle. Claspette blade with apex sharply acute, slightly decurved. Lobes of 9th tergite completely divided, each lobe with 1–3 stout setae.

FEMALE.—Wing 2.7–3.0 mm. Similar to the male but differing chiefly as follows: proboscis yellow, the basal portion dark scaled, venter of apex with a patch of black scales, some scattered black scales may be present elsewhere. Palpus about one-third as long as the proboscis. Tarsal claws equal, those of fore and mid legs each with a median tooth. Tergites dark scaled, pale spots dorsally, laterodorsal margin with pale scaling present as spots or irregular marks only (one specimen was seen in which the pale scaling was somewhat streaklike on II); extreme lateral margin with a line of white

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[5] After this paper and the included plates were finished, a single male specimen (Cape Melville, Balabac Is., June, 1945, reared from pandanus, Jean L. Laffoon) was encountered, which apparently represents an undescribed species of the *kochi* group. It is similar to *medleri* in having the proboscis largely dark scaled except for a median band, and to *aranetanus* in having the subapical tergal scale tuft of the basistyle long and pale; but differs from either in that this scale tuft arises in a scattered elongate area extending from the row of stout setae on the basal one-third of the tergal aspect to near the apex of the basistyle, instead of from a compact circular area as in *medleri* and *aranetanus*.

scales that bends briefly dorsad at the apical margin, this portion slightly subapical on VI–VII; apical margin of some segments with a line of yellow scales; VII–VIII largely pale dorsally.

LARVA.—*Head.*—Head hair 1 single; 4 with 3–5 branches; 5 single; 6 with 1–2; 7 with 5–7; 8 with 1–3; 9 with 2–3, about as large as 5; 11 single, inserted about middle of antennal shaft; 12 with 4–7 (stellate); 13 with 2; 14 with 1–2; 15 single; 17 with 4–7; 18 with 5–8 (stellate); 20 very small, with 2–5. Median mouthbrush hairs with comblike tips. Mandible with a large dark tooth anterior to the longest tooth. Mentum with 9–10 teeth on each side.

Thorax (figs. 22 and 24).—Most of dorsal and ventral hairs stellate. Prothoracic hair 0 small, with 2–5 branches. Pleural groups of II and III as in *stonei.*

Abdomen (fig. 29).—Some dorsal and ventral hairs stellate, apices forked, with 4–10 branches. Main lateral hair of I–II with 5–7 branches, of III–VI with 2. Pentad hair 1 with 9–11 branches, 2 and 4 single, 3 with 5–6, 5 with 4–6. Comb scales approximately 60 in number, arranged in a subtriangular patch, those in distal row not much longer than those anterior to them, distal scales with a complete delicate fringe. Siphon pale yellow; nearly bare (fine hairs visible basally under very high power); index about 2.5; acus indistinguishable; hair tuft with 2–4 branches, shorter than diameter of siphon at point of insertion; 7–10 pecten teeth, teeth with an apical fringe; hair of dorsolateral valve single, 0.5–0.8 as long as diameter of siphon apex, basal hair of ventrolateral valve single, 0.2–0.4 as long. Anal plate nearly bare, numerous fringed spines on caudal margin, none of these ventral to *lh; lh* with 1–2 branches, situated on posteroventral corner of plate; *isc* with 3–5 branches. Ventral brush with 10 tufts, all but anterior 2 arising from a weakly sclerotized barred area, each tuft with 3–5 branches. Anal gills sausage-shaped, dorsal pair longer than the ventral pair and 2.9–3.5 times longer than the anal plate.

PUPA (fig. 14).—See pupal key.

TYPES.—*Holotype.*—Male, with larval skin (U.S.N.M., Cat. No. 58019), Jinamoc Island (Leyte-Samar area), Philippines, March 29, 1945 (J. T. Medler), reared from pandanus axil.

Paratypes (20 males, 11 females, 2 larvae, 10 larval skins, 5 pupal skins; 8 larval and all pupal skins associated with adults). Jinamoc Island, March 29, 1945 (J. T. Medler); Pintanahon (coastal, near Osmena), Samar, April 23, 1945 (Jean L. Laffoon), reared from banana axil, elevation about 500 feet; Osmena, Samar, May 22, 1945 (E. S. Zolik), reared from pandanus axil; Tacloban, Leyte, May 5–8, August 15 and 26, September 8, 1945 (H. R. Roberts), reared from taro, pandanus, and abaca; Zamboanga, Zamboanga Prov., Mindanao, September 29, 1945 (Jean Laffoon, K. L. Knight), elevation about 500 feet, collected as adults resting on pale-bark trees in a damp shaded ravine; Ngolos, Calicoan Island (Leyte–Samar area), December 30, 1944 (J. H. Paullus), collected in taro axil.

Remarks.—This species is closely related to *aranetanus,* but differs from it in the color of the proboscis scaling in the male and by the lack of streaklike pale scales on the laterodorsal margin of the basal abdominal tergites in the female. The larva is readily distinguished by the color of the siphon and anal plate. The pupa is apparently indistinguishable from that of *aranetanus.*

This species is dedicated to the collector of the types, Dr. J. T. Medler, in recognition of his collecting work in the Philippines.

Aedes (Finlaya) croceus new species

(Pl. X, figs. 7 and 9; pl. XI, figs. 15 and 21.)

MALE.—Wing 2.8–3.1 mm. Similar to *stonei,* but differing chiefly as follows: proboscis yellow scaled, a small patch of basal black scales ventrally, a few scattered black scales laterally, rarely a very few apicoventral dark scales. Antennal plumose hairs dusky yellow. Pale narrow curved scales of vertex confined to the median line and to the nape. *Ppn* with only a few dark scales, or none. Pleural scale patches as in *stonei* except that the line of scales extending dorsally and ventrally from the dorsal sternopleural patch is absent (as in fig. 1). Fore and mid tarsi may vary to being almost entirely without dark scales. Claws of fore and mid tarsi unequal, the larger claw bidentate (one tooth basal), the smaller unidentate. Amounts of pale and dark wing scales variable, costa may be nearly all pale scaled except for a broken dark area just beyond the middle. Halter pale. Median dark scaled areas of tergites IV–VII scanty.

Genitalia (figs. 7 and 9).—Basistyle densely clothed with yellow scales, some black scales intermixed; membranous inner surface bears a dense cluster of yellow stout short setae and a clump of broad acutely tipped yellowish scales; inner tergal aspect with a line of setae along the inner margin, increasing basally into a large clump of setae; tergal margin with a subapical patch of strong extremely long setae, and 1–3 even larger setae before the middle. Dististyle swollen to apical one-third, this portion usually being evenly rounded, but occasionally a small inner pointed projection may occur; appendage about 0.4 the dististyle in length. Claspette blade with apex acute, decurved. Lobes of 9th tergite completely divided, each lobe with 3–5 stout setae (rarely 1–2).

FEMALE.—Wing 3.0–3.5 mm. Similar to the male but differing chiefly as follows: palpus slightly more than one-third as long as the proboscis. Tarsal claws equal, each with a median tooth on fore and mid legs. Tergites dark scaled, pale spots medially; apical margin of some segments with a line of yellow scales; lateral margin with a line of white scales that bends dorsally for a short distance at the apical margin, this portion slightly subapical on VI–VII; when yellow scales are present on the dorsolateral margin they are usually in spots and not as longitudinal streaks; VII–VIII largely pale dorsally.

LARVA.—The larva of *croceus* is apparently indistinguishable from that of *flavipennis* (see the larval description for that species).

PUPA (figs. 15 and 21).—See pupal key.

TYPES.—*Holotype.*—Male, with associated larval and pupal skin (U.S.N.M., Cat. No. 58020), Subic Bay, Zambales Province, Luzon Island, Philippines, July 26, 1945 (L. E. Rozeboom), reared from banana axil.

Paratypes.—Sixteen males, 13 females, with associated larval and pupal skins, same data as for holotype; 1 male, 3 females, 2 sets of associated skins, Subic Bay, Luzon, August 16, 1945 (M. J. MacMillan), reared from taro axil.

Remarks.—This species is closely related to *flavipennis.* The male genitalia and larvae are apparently inseparable. The adults are externally separable by the absence of hairs on the male tergites of *croceus,* and by the scantiness of the hairs between the tergites of the female of that species.

The name of this species is derived from its predominantly yellow color.

Aedes (Finlaya) aranetanus (Banks) (Pl. XII, fig. 30.)

1906. *Finlaya aranetanus* Banks, Phil. Journ. Sci., I: 1001 (male and female). [Type locality, Negros Island (Philippines): Mailum, Bago Municip., Negros Occidental Province; and Siya-Siya Peak, Canloan Volcano, 700 m., Negros Occidental Province.] *Type.*—Ent. Coll., Bur. Sci., No. 6066, Manila.

LARVA (10 specimens from Palawan, Luzon, and Samar).—Previously undescribed.

Head.—Hair 1 single; 4 with 4–7 branches; 5 single; 6 double; 7 with 5–7; 8 with 1–3; 9 with 1–4; 11 single, inserted about the middle of shaft; 12 with 5–6 (stellate); 13 with 2–3; 14 with 1–3; 15 single; 17 with 6–8; 18 with 5–10 (stellate); 20 very small, with 4–5. Median mouthbrush hairs with comblike tips. Mandible with a large dark tooth anterior to the longest tooth. Mentum with 7–9 teeth on each side.

Thorax.—Prothoracic hair 0 small, with 3–5 branches. Pleural groups of II and III as in *stonei.*

Abdomen (fig. 30).—Some dorsal and ventral hairs prominently stellate, apices forked, with 6–10 branches. Main lateral hair of I and II with 4–7 branches, of III–VI with 2. Pentad hair 1 with 8–13 branches, 2 single,

3 with 5–7, 4 with 1–2, 5 with 5–6. Comb scales approximately 60 in number, arranged in a subtriangular patch, scales in distal row not much longer than those anterior to them, distal scales with a complete delicate fringe. Siphon very dark brown, sometimes paler near apex; nearly bare (some hairs visible under high magnification); index 1.9–2.6; acus small, detached; hair tuft with 2–3 branches, fairly strong, shorter than diameter of siphon at point of insertion; 7–9 pecten teeth, apically fringed; hair of dorsolateral valve single, 0.5–0.7 as long as diameter of siphon apex, basal hair of ventrolateral valve single, 0.3–0.4 as long. Anal plate dark, nearly bare, with about 20 long narrow fringed spines on posterior margin, no spines ventral to *lh; lh* on ventroposterior corner of plate, with 2–3 branches; *isc* with 4–6. Ventral brush composed of 10 tufts, arising from a barred area, each tuft 3–6 branched. Anal gills sausage-shaped, dorsal pair somewhat longer than ventral pair and 2.6–2.7 times as long as anal plate.

PUPA.—See pupal key.

Habitat.—The larvae occur commonly in the axils of taro (several species), banana, abaca, and pandanus (several species).

Remarks.—Occasionally, a female specimen of this species is encountered which is apparently inseparable from that of either *medleri* or *croceus.*

Since the adult of *aranetanus* is apparently rather well understood, it has not been redescribed. For a comprehensive figure of the male genitalia, see Stone and Bohart (1944).

Stone and Bohart (1944) synonymized *flavipennis* (Giles) of Brug (1934, 1939) with *aranetanus*. However, Brug's (1934) figure of the male genitalia indicates the possibility that his species is new. The nature of the subapical scale tuft and of the stem of the claspette of his species is quite different from those structures in *aranetanus*. Unfortunately, Brug lists neither the origin of his material, nor its present whereabouts (possibly in the British Museum).

Distribution.—This species apparently does not occur outside of the Philippines. Specimens were examined from the following areas: *U.S.N.M. Collection* (85 males, 56 females, 30 sets of associated larval and pupal skins, 5 larvae). Negros: Negros Occidental Province (cotypes). Luzon: Ft. McKinley, Rizal Prov.; Camp Stotsenberg, Pampanga Prov. (W. H. Tefft); Baguio, Mountain Prov. (S. E. Shields); Subic Bay, Zambales Prov. (M. J. MacMillan, L. E. Rozeboom). Leyte (K. V. Krombein). Samar: Bulusao (M. J. MacMillan); Osmena (E. S. Zolik).

Palawan: Puerto Princesa (Fitzjarrell); Iwahig (Jean L. Laffoon); Bacungan (D. R. Johnson). Busuanga: Coron (Fitzjarrell). Balabac: Cape Melville (Jean L. Laffoon). Calicoan Island (J. H. Paullus). *Acad. Nat. Sci. Philadelphia Collection* (9 males, 3 females, 6 sets of assoc. larval and pupal skins): Leyte: Palo; Tacloban (H. R. Roberts).

Aedes (Finlaya) flavipennis (Giles) (Pl. XI, fig. 23; pl. XII, fig. 32.)

1904. *Finlaya flavipennis* Giles, Journ. Trop. Med., VII: 366 (male and female). [Type locality, Luzon Island (Philippines): Camp Stotsenberg, Pampanga Province.] *Type.*—Male and female in British Museum.

1905. *Popea lutea* Ludlow, Can. Ent., XXXVII: 96 (male). [Type locality, Luzon Island: Camp Stotsenberg, Angeles, Pampanga Province.] *Type.*—No longer in existence.

LARVA (8 specimens from Samar, Leyte, and Luzon).—Previously undescribed.

Head.—Hair 1 single; 4 with 2–3 branches; 5 single; 6 double (branched far from base); 7 with 2–3; 8 with 1–3; 9 with 2–3; 11 single, inserted beyond middle; 12 with 2; 13 with 2–3; 14 with 1–2; 15 with 1–2; 17 with 2–3; 18 with 1–3 (stellate); 20 minute. Median mouthbrush hairs with comblike tips. Mandible with a large dark tooth anterior to the longest tooth. Mentum with 8–10 teeth on each side.

Thorax (fig. 23).—Prothoracic hair 0 very small, with 2 branches. Pleural groups of II and III with hair 9 prominently branched, long; 10 very long, stout, single; 11 forming a stout elongate spine; 12 on II similar to hair 10, but on III slender, short.

Abdomen (fig. 32).—Some dorsal and ventral hairs stellate in type (stout short subequal branches), apices with small irregular projections, with 1–4 branches. Main lateral hair of I and II with 4–5 branches (rarely 3), shorter than the following lateral hairs; III–VI double. Pentad hair 1 with 5–7 branches, 2 and 4 single, 3 with 5–8; 5 with 3–4. Comb scales approximately 55–69 in number, those in distal row not much longer than the others, with a fine pale fringe which is more pronounced apically. Siphon pale yellow; nearly bare; index 1.8–2.1; acus small, detached; hair tuft double, stout, about half as long as diameter of siphon at point of insertion; 6–8 pecten teeth, broad, fringed along most of ventral margin; hair of ventrolateral (basal hair) and dorsolateral valves not over half as long as diameter of siphon at apex. Anal plate yellow, nearly bare, a row of about 10 broad fringed scales (similar to comb scales) on each side along posterior margin, none ventral to *lh*; *lh* with 2–3 branches, the dorsal branch distinctly shorter than the ventral; *isc* with 3 branches. Ventral brush composed of 10 tufts, these arising from a barred area, each tuft 1–3 branched. Anal gills very broad, usually somewhat ovoid, dorsal pair slightly longer than ventral pair and 3.0–4.4 times as long as the anal plate.

PUPA.—See pupal key.

Habitat.—The larvae have been collected from water in the axils of a species of palm, from taro (more than one species), and from banana. In Mindanao, the adults were found resting on the pale bark of a large species of jungle tree in a damp heavily shaded ravine.

Remarks.—There is no definite evidence that this species occurs outside of the Philippines (see under *aranetanus* for a discussion of Brug's *flavipennis*).

The adult of *flavipennis* is well distinct externally from the other Oriental members of the *kochi* group on the character of the hairs of the abdominal tergites, as pointed out in the key. Apparently neither the male genitalia nor the larva of *flavipennis* is distinct from that of *croceus*. For a comprehensive figure of the male genitalia, see Stone and Bohart (1944).

Although Edwards (1922) synonymized *lutea* Ludlow with *flavipennis* and Dyar and Shannon (1925) stated that the type, while in fragments, was identical with *flavipennis*, neither paper stated whether or not the types of the two species were actually compared. Therefore, the possibility still exists that these two species are not conspecific. However, the fact that both types came from the same spot possibly provided some basis for their synonomy.

Although the type of *lutea* apparently no longer exists, there is a series of specimens in the U.S.N.M. labeled (apparently in Dr. Ludlow's handwriting) "*Popea lutea* Ludl., female and male cotypes, P. I." The concept of *flavipennis* used by Stone and Bohart (1944) and by us is based on this series. However, the necessity for the examination of the type of *flavipennis* still exists.

Distribution.—Specimens were examined from the following areas: *U.S.N.M. Collection* (10 males, 9 females). Luzon: Mt. Makiling, 2,000 feet (H. Hoogstraal). Leyte: Abuyog (Toffaleti). Samar: Guirang and Calotons, on Basey River (A. E. McMillan). Mindanao: Pasanonca, Zamboanga Prov. (Jean L. Laffoon). Basilan: Isabela (K. L. Knight). *Acad. Nat. Sci. Philadelphia Collection* (29 males, 22 females, 5 sets of associated larval and pupal skins, 4 larvae). Leyte: Tacloban; Lagolago (Lat. 10° 44.8', Long. 124° 47.2') (H. R. Roberts).

Aedes (Finlaya) avistyla Brug

1939. *Aedes* (*Finlaya*) *flavipennis* (Giles) var. *avistyla* Brug, Tijdschr. v. Ent., LXXXII: 107 (male, female, larva). [Type locality, Celebes: Lindoe Lake, 1,000 m., and Kalawara.] Boeton: Baoe-baoe. *Type.*—British Museum.

At present, this is the only Oriental black, yellow, and white species of the *kochi* group definitely known from outside the Philippines. Unfortunately, the original description does not contain sufficient information to place *avistyla* in any of the keys prepared for this paper, and no material was available for study.

Miss E. L. Marks (University of Queensland, Brisbane) stated in a recent communication that she has seen the larva of *avistyla* from Morotai, Moluccas (this is the first known extension of an Oriental species of the *kochi* group into the Australasian Region) and that it is near *flavipennis* (and thus *croceus* also). However, according to her, the distal comb scales of *avistyla* are laterally fringed, with a stout pointed terminal spine that is almost as long as the remainder of the scale, and the stellate hairs of the body are about 10-branched.

The male genitalia of *avistyla*, as shown by Brug, is indistinguishable from that of *flavipennis* and *croceus*, except for the small pointed subapical projection of the dististyle. However, at least one specimen of both the latter species has been seen with a small similar projection on one of the two dististyles. Although Brug had a considerable series of males, he made no mention of variation in the shape of the dististyle. Therefore, it would seem likely that the possession of a well-defined subapical projection on both dististyles of a male genitalia would reliably separate *avistyla* from *flavipennis* and *croceus*.

On the basis of the larval and genitalic differences described above, *croceus* was considered to be a species distinct from *avistyla*.

Aedes (Finlaya) ananae new species

(Pl. X, figs. 5 and 11; pl. XI, figs. 18 and 20; pl. XII, figs. 28 and 33.)

MALE.—Wing 2.1-2.5 mm.

Head.—Proboscis slightly longer than the front femur; black scaled, a few dorsal white scales medially and apically, 2 ventral rows of outstanding dark scales from base to just beyond middle. Palpus slightly longer than the proboscis; black scaled (venter bare), the long portion with 4 white bands, the subapical segment basally white banded, the terminal segment with basal and apical white bands. Torus with a patch of small broad white scales on mesal surface, antennal hairs dusky. Vertex with a median line of narrow white scales, some broad white scales on either side and anteriorly, a submedian patch of broad dark scales with dark forked upright scales intermixed, this area followed laterally by a patch of broad white scales, remainder with broad dark scales except for a small sublateral anterior patch of broad white scales, some dark forked upright scales on the nape.

Thorax.—Scutal integument brown; sparsely covered with small hair-like scales; 3 distinct white spots present, one medially at the anterior margin and a paired one sublaterally above either anterior fossa; many pale yellow scales present, these primarily located on and before the prescutellar area. above the wing base, over *ppn,* and along the fossa (some of these scales may be white); remainder of scutal scales dark. Mid scutellar lobe with broad appressed white scales, those on apex dusky; lateral lobe with narrow curved yellowish scales; narrow hairlike pale yellow scales on the margins of all the lobes. *Apn* covered with broad white scales; *ppn* with broad scales, dark dorsally, cream colored below, considerable variation in the number of either color, some dark scales may be scattered throughout the pale ones. Pleuron brown; patches of broad white scales present on the following areas: propleuron, below the postspiracular area, paratergite, prealar area, upper (from the prealar area ventrally almost to the midpoint) and lower posterior areas of the sternopleuron, and upper mesepimeron. Fore and mid coxae with broad white scales above, broad dark ones below Femora, tibiae, and tarsi dark scaled, prominently marked by transverse white bands; apices of mid and hind femora without prominent tufts of outstanding scales, a few ventrally outstanding scales on the fore femur; fore tarsus with I medially and apically banded, II apically banded, III and IV all dark, V all white; mid tarsus similar to fore except that I also possesses a basal band; hind tarsus with I basally, medially and apically banded, II and III with slightly less than apical half white, IV all dark, V all white; claws of fore and mid tarsi unequal, the larger claw bidentate (one tooth basal), the smaller with a single subbasal tooth. Wing black scaled with prominent white patches, costa with 3 white spots before the middle and 3 (rarely 4) smaller ones beyond Fork of vein 4 basad to that of 2. Halter pale, knob dark scaled.

Abdomen.—Tergites dark scaled, dorsum of II–VII marked by a cream-colored basal median spot and a paired creamy subapical lateral spot (occasionally some of these spots may be reduced or missing), lateral margin of each tergite with a band of white scales, this band bends mesad subapically and may be visible dorsally on V–VII; lateral and apical margins with a row of long pale hairs; sternites with mixed white and dark scales, apices of V–VII with outstanding dark scales.

Genitalia (figs. 5 and 11).—Basistyle densely clothed with black scales; membranous inner surface bears a cluster of pale stout short setae and a clump of broad dusky scales; inner margin of inner tergal surface with a band of slender short setae, a bare area between these and where the lateral scales and hairs begin. Dististyle swollen just beyond the middle, considerably narrowed at apex, appendage about 0.72 as long as the dististyle. Claspette elongate, extending posteriorly to a level with the apex of the basistyle, claspette blade evenly tapered to a long slender tip. Lobes of 9th tergite completely divided, each lobe with 2 stout setae.

FEMALE.—Differs from male chiefly as follows: wing 2.3–2.8 mm. Proboscis with a white band just beyond the middle (occasionally narrow and partially incomplete). Palpus about one-fourth the length of the proboscis, dark scaled except for white apical scales. No median broad white scales on the vertex, some narrow pale scales on the nape, pale narrow scales along the eye margins. Claws of fore and mid tarsi equal, each bearing a single tooth. Dorsum of abdominal tergites II, VI and VII marked as in male, on III–V the basal median pale spot is absent (frequently the pair of subapical spots may be absent on one or more of segments II–V); a line of white scales on lateral margins of tergites, on II–VII this line curves subapically onto the margin of the dorsum.

LARVA.—*Head* (fig. 28).—Hair 1 with 3–4 branches; 4 candelabra-like, with 11–21 branches; 5 single; 6 with 7–10; 7 with 9–13; 8 very small, with 1–3; 9 small, with 3–4; 11 single, inserted beyond middle of antennal shaft; 12 with 12–18 (stellate); 13 with 1–3; 14 and 15 single; 17 with 16–20 (stellate); 18 with 16–24 (stellate); 20 with 3–5. Median mouthbrush hairs with fine comblike tips. Mandible without a large dark tooth anterior to the longest tooth. Mentum with 9–10 teeth on each side.

Thorax.—Prothoracic hair 0 stellate, very large, with about 35 branches. Pleural groups of II and III with 9 prominently branched, long; 10 very long, stout, single; 11 short, prominently stellate, many branched; 12 on II similar to hair 10, but on III slender, single, not much longer than 11.

Abdomen (fig. 33).—Some dorsal and ventral hairs prominently stellate, with 25–38 branches, apices forked. Main lateral hair of I and II with 7–10 branches, of III–V with 3 branches (rarely 4–5), of VI with 4 (rarely 3). Pentad hair 1 with 25–38 branches, 2 and 4 single, 3 with 2–3, 5 with 23–29. Comb teeth approximately 100 in number; teeth in distal row much longer than the others, apparently bare except for a pair of lateral denticles near the base, sometimes 1–2 others close to these. Siphon pale yellow; densely hairy (hairs easily visible under low magnification); index 3.3–4.0; acus indistinguishable (probably due to the extremely pale nature of the sclerotized portions); hair tuft with 4–5 branches, longer than diameter of siphon at point of insertion; 7–12 pecten teeth, teeth long and narrow, an apical fringe; hair of dorsolateral valve 2 1–2.6 times diameter of siphon at apex, basal hair of ventrolateral valve 2.2–3.0 times siphon apex diameter. Anal plate pale yellow, densely hairy, numerous bare spines on apical margin, many of these ventral to *lh; lh* with 2–3 branches; *isc* with 7–8. Ventral brush composed of 10 tufts, not arising from a barred area, each tuft with 3–8 branches. Anal gills slender, tapering from base, dorsal pair slightly longer than ventral pair, 3.0–3.4 times longer than anal plate.

PUPA (figs. 18 and 20).—See key to pupae.

Remarks.—This species is distinct in the adult form from the described black and white species of the *kochi* group on the narrow yellowish scales of the lateral scutellar lobes, and in the larva by the unusual branching of head hair 4.

TYPES.—*Holotype.*—Male (U.S.N.M. Cat. No. 58021), Osmena,[4] Basey Municipality, Samar Island, Philippines, April 13, 1945 (Jean L. Laffoon), reared from pineapple axil.

Paratypes (44 males, 55 females, 29 associated larval and pupal skins, 2 larval and 1 pupal unassociated skins, 18 larvae).—Same data as for holotype; Ducong (Basey River, Basey Municip.), Samar, May 8, 1945 (E. S. Zolik), reared from banana axils; Pintanahon (coastal, near Osmena), Samar, May 25, 1945 (A. E. McMillan and M. J. MacMillan), reared from pandanus axils; Osmena, Samar, April–August (K. L. Knight, Jean L. Laffoon, D. R. Johnson), reared from pandanus, banana, and pineapple axils; Lagolago (near Baybay), Leyte, January and February, 1945 (H. R. Roberts), reared from pandanus axils; Mt. Lobi, Dagami, Leyte, elevation approximately 1,000 feet, August 14, 1945 (H. R. Roberts, K. L. Knight), reared from abaca axils in mountain forest; Tacloban, Leyte, August 16, 1945 (K. L. Knight), reared from pandanus axils; Tacloban, Leyte, June–September, 1945 (H. R. Roberts), 3 collections reared from pandanus axils, 2 from abaca axils.

This species is named from the Spanish word (anana) for pineapple.

Aedes (Finlaya) poicilia (Theobald)

(Pl. X, figs. 4 and 6; pl. XI, figs. 17, 19, and 26, pl. XII, figs. 27 and 34.)

1903. *Finalya poicilia* Theobald, Mon. Cul., III: 283 (female). [Type locality, Penang, Malay Peninsula.] *Type.*—Female in British Museum.

1944. *Aedes* (*Finlaya*) *poicilia* (Theobald). Stone and Bohart, Proc. Ent. Soc. Wash., XLVI: 211. Complete synonymic review.

1944. *Aedes* (*Finlaya*) *poecilius* (Theobald). Stone and Bohart, loc. cit. Misspelling.

MALE and FEMALE.—Similar to *ananae* but differing chiefly as follows: scutum with a variegated pattern of brown and pale yellow scales, a sublateral linear area of cream colored scales above the fossa, a small poorly defined spot of similar scales medially on the anterior margin. Scutellar lobes with broad appressed scales, white basally and dark apically, some narrow pale scales basally on the mid lobe. *Ppn* with the pale scales white, outnumbering the dark scales. Fore femur with an apical tuft of outstanding ventral scales, a smaller tuft on the mid femur; some basal white scales on I of fore tarsus. Abdominal tergites with 3 pale spots on II and VII, on III–VI the basal median spot usually absent, frequently a subbasal pair present on V–VI in addition to the subapical pair (absent in the female).

Male Genitalia (figs. 4 and 6).—Inner margin of inner tergal surface of basistyle with setae scattered throughout and extending dorsally and laterally to the beginning of the clothing scales. Dististyle slightly swollen medially, appendage 0.60–0.76 as long as the dististyle.

LARVA (10 specimens from Culion, Samar, Leyte, and Mindanao).—*Head* (figs. 26 and 27).—Hair 1 double (single in 3 of 64 cases); 4 with 3–7 branches; 5 single; 6 with 2–3; 7 with 4–9; 8 with 1–3; 9 with 1–3; 11 single, inserted beyond middle of shaft; 12 with 7–9 (stellate); 13 with 2–3; 14 with 1–2; 15 with 1–2; 17 with 11–14 (stellate); 18 with 7–11 (stellate); 20 very small, with 4–6. Some of median mouthbrush hairs with comblike tips. Mandible without a large dark tooth anterior to the longest tooth. Mentum with 9–10 teeth on each side.

Thorax.—Prothoracic hair 0 stellate, with 9–14 branches. Pleural groups of II and III with hair 9 prominently branched, long; 10 very long, stout, single; 11 stout, short, spinose, laterally frayed (once seen with a branch); 12 on II similar to hair 10, but on III slender, single, about twice length of hair 11.

Abdomen (fig. 34).—Some dorsal and ventral hairs prominently stellate, with 8–13 branches, apices forked. Main lateral hair of I and II with 5–7 branches, III–VI with 2–3. Pentad hair 1 with 7–11 branches, 2 and 4 single, 3 with 4–6, 5 with 6–11. Comb teeth about 70 in number; those in distal row much larger than the others; distal teeth also with a pair of large lateral denticles near the base; apical portion of distal teeth expanded, very pale, with a delicate fringe. Siphon pale yellow; covered with very fine pale hairs; index about 2.6; acus indistinguishable; hair tuft with 3–6 branches, shorter than diameter of siphon at point of insertion; 8–13 pecten teeth, teeth broad, with a ventral fringe, sometimes dorsally also; hair of dorsolateral valve 0.6–0.8 as long as diameter of siphon apex, basal hair of ventrolateral valve 1.2–1.6 times as long. Anal plate pale yellow, with very fine pale hairs, a number of fringed spines along apical margin, some of them ventral to *lh; lh* with 2–3 branches; *isc* with 4–5. Ventral brush composed of 10 tufts, arising from a weakly sclerotized barred area, each tuft with 3–7 branches. Anal gills lanceolate, dorsal pair longer than ventral pair, 2.3–3.0 times as long as the anal plate.

A small series of larvae and larval skins (the skins are associated with adults that are apparently undistinguishable from *poicilia*) from Palawan are distinct in several respects from the specimens described above. The stellate tufts are stouter and longer, with more branches (15–20), and the individual hairs are distinctly spiculated. The siphon and anal plate are distinctly hairy, and the pecten teeth are somewhat longer.

PUPA (figs. 17 and 19).—See pupal key.

Habitat.—The daytime resting places of the adults are commonly in damp shaded thickets and ravines. They feed readily on humans, entering habitations if necessary, at all hours of the day and night (H. R. Roberts). Adults have also been taken from light traps.

The larvae are commonly collected in the axils of aroid-type plants, banana, and abaca plants, and less commonly in pandanus. A few doubtful records of larval collections from rock holes, coconut half shells, and artificial containers have also been seen.

Remarks.—Due to discrepancies between the literature descriptions of *poicilia* and the material described above, the correct identity of the Philippine species remains in question. Theobald, in his original description, states that the lateral scutellar lobes are black scaled (also Barraud, 1934); whereas, in all the Philippine material seen, there are always some white scales on these structures. The only existing descriptions of the male genitalia are by Edwards (1926) from Philippine specimens and by Brug (1934) from unspecified material (neither apparently differ from the material studied by us). Until the male genitalia is known from the Malayan area (or at least from more immediately adjacent regions to the type locality than the Philippines), the correct identification of *poicilia* will probably remain doubtful. In view of the extreme geographical speciation of the *kochi* group, it seems likely that the Philippine material represents an unnamed species.

The only existing larval descriptions are by Brug (1931, from Javan specimens), Edwards (in Barraud, 1934, from Brug's Javan material), and Bonne-Wepster and Brug (1939, origin of specimens undesignated). Brug (1931) describes the larva as having head hair 5 with 3 branches, as having a stout elongate spine at the base of the thoracic pleural tufts, and the siphon finely pilose. Edwards' description differs from that of Brug's in stating that no special spines occur on the plates of the thorax (describes head hair 5 with 2–3 branches). Whether or not the thoracic spines occur, the Javan specimens are markedly distinct from those of the Philippines on the branching of head hair 5.

From the above remarks it can be seen that almost assuredly two or more species have been identified under the name *poicilia.*

Distribution.—Only Philippine specimens were available for study. Material was examined from the following areas: *U.S.*

N.M. Collection (a very large series of adults). Luzon: Subic Bay, Zambales Prov.; Los Banos; Camp Stotsenberg and Mabalacat, Pampanga Prov.; Ft. Wm. McKinley, Rizal Prov.; Manila, Manila Prov.; Camp Daraga, Albray Prov.; Nagillian. Leyte: Gabas; Tacloban; Abuyog. Jinamoc Island. Calicoan Island. Palawan: Iwahig; Balsahan River; Puerto Princesa. Balabac: Cape Melville. Culion: Pilapil. Mindanao: Zamboanga, Pasanonco, and San Ramon, Zamboanga Prov.; Parang, Surigao Prov. Jolo: Jolo. *Acad. Nat. Sci. Philadelphia Collection* (154 males and females, 13 associated larval and pupal skins). Leyte: Tacloban; Lagolago (near Baybay); Palo; Dulag; Valencia. Dinagat: Panamaon. (All collected by H. R. Roberts.)

This species is reported in the literature from: Java, Sumatra, Borneo, Celebes, Malayan Peninsula and Archipelago, North Bengal, Burma, and the Philippines (the only additional Philippine locality to those listed above is Negros: Bago, Mailum). The Australasian records all undoubtedly refer to *kochi*.

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EXPLANATION OF PLATES

In each case the general geographical locality is given for the specimen from which the drawing was made (all from the Philippine Islands).

Figs. 1 (Samar) and 2 (Samar). Lateral aspect of adult. Scaling of head, scutum, scutellum, and legs omitted.

Figs. 3 (Samar), 4 (Samar), 5 (Samar), 7 (Luzon), and 10 (Mindanao). Inner tergal aspect of basistyle of male genitalia. Setal rings indicate location of omitted setae.

Figs. 6 (Palawan), 8 (Samar), 9 (Luzon), 11 (Samar), and 12 (Mindanao). Lateral aspect of dissected claspette.

Figs. 13 (Samar), 14 (Samar), 17 (Samar), 18 (Samar), and 21 (Luzon). Abdominal segments of pupa. Ventral aspect to the left. Fig. 13 includes the metathorax.

Fig. 15 (Luzon). Vertical plate of cephalothorax.

Fig. 16 (Samar). Portion of flattened cephalothorax.

Figs. 19 (Samar) and 20 (Samar). Dorsal aspect of metathorax.

Figs. 22 (Leyte) and 23 (Leyte). Dorsal aspect of metathoracic pleural tuft of larva.

Fig. 24 (Leyte). Dorsal aspect of prothorax of larva.

Figs. 25 (Samar) and 26 (Samar). Dorsal aspect of mandible of larva.

Figs. 27 (Samar) and 28 (Samar) Dorsal aspect of larval head.

Figs. 29 (Leyte), 30 (Palawan), 31 (Samar), 32 (Leyte), 33 (Samar), and 34 (Samar). Lateral aspect of larval terminal segments.

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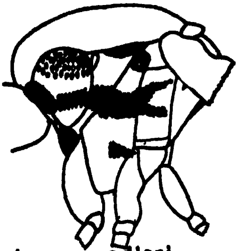
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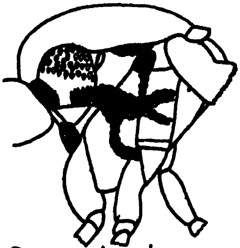
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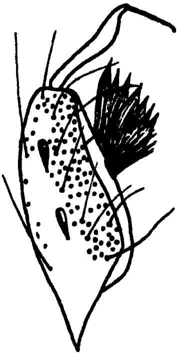
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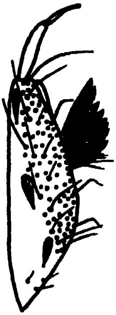
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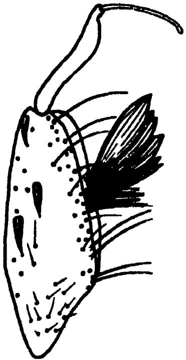
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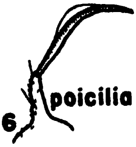
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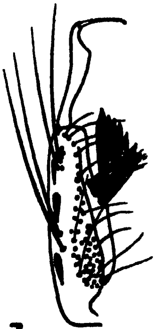
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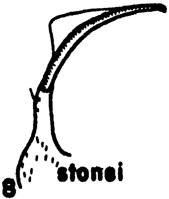
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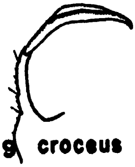
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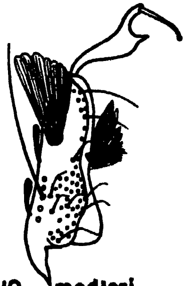
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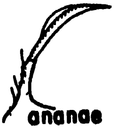
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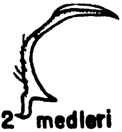
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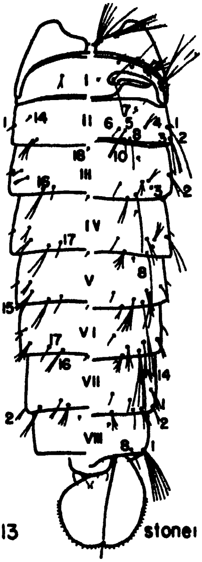
KNIGHT AND LAFFOON—ORIENTAL AEDES



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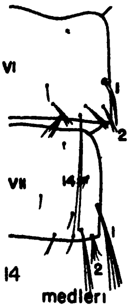

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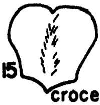

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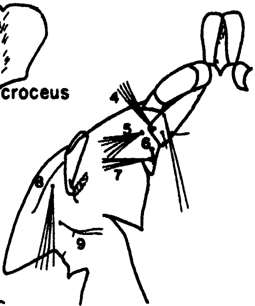

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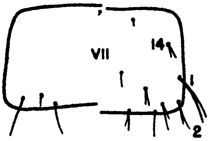

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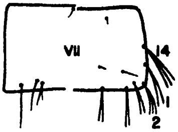

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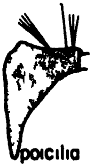

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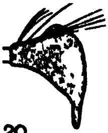

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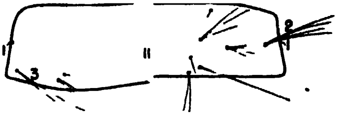

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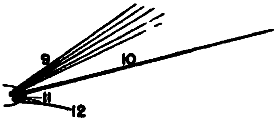

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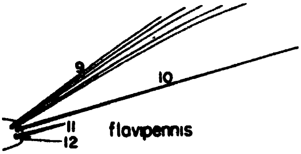

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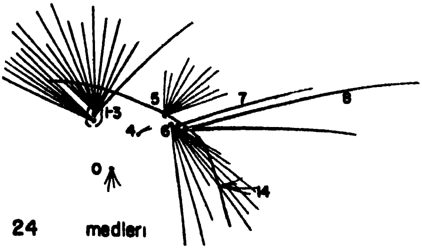

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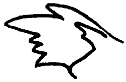

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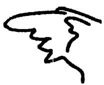
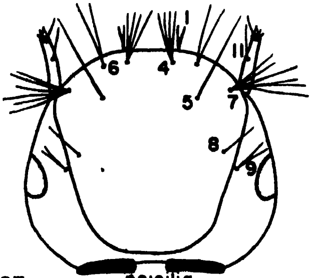


26 poicilia

KNIGHT AND LAFFOON—ORIENTAL AEDES



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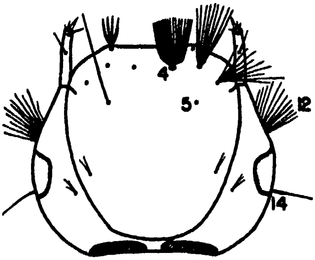

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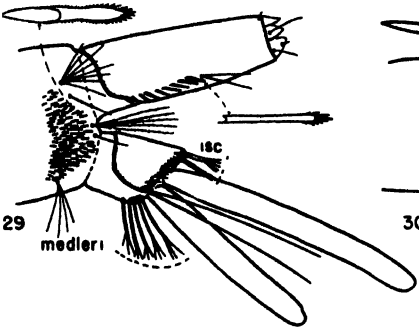
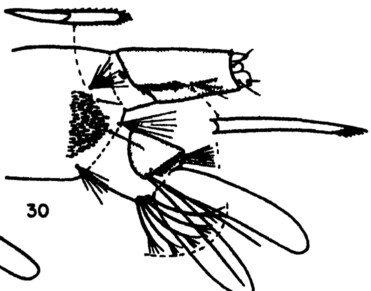
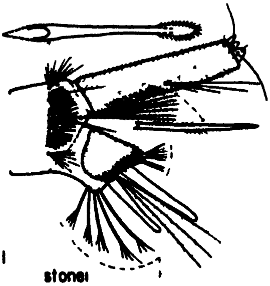


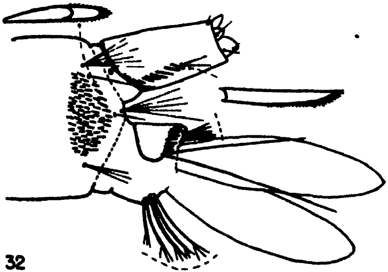
29 medleri



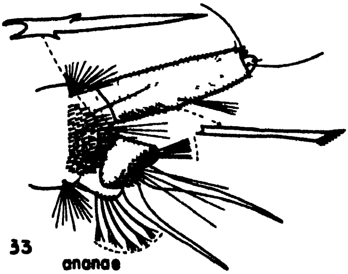
30 aranetanus



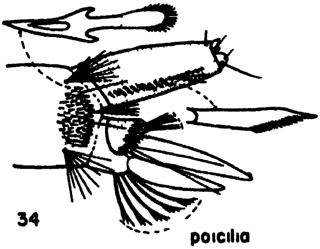
31 stonei



32 flavipennis



33 ananae



34 poicilia

KNIGHT AND LAFFOON—ORIENTAL AEDES

SYNOPSES OF NORTH AMERICAN EPHYDRIDAE (DIPTERA)

III. The Tribe Notiphilini of the Subfamily Notiphilinae

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The present paper continues this series of synopses of which two parts have been published, dealing with the subfamily Psilopinae and three tribes of the subfamily Notiphilinae, i.e. Hydrelliini,* Hydrinini and Ilytheini.[1] The present part embraces the tribe Notiphilini, completing the subfamily Notiphilinae. Also is included a key to the tribes of the subfamily which was, by an oversight, omitted from the previous part.

Subfamily NOTIPHILINAE Loew

1862. Notiphilina Loew, Neue Beitr, VII, p. 4.
1929. Notiphilinae Cresson, Trans. Amer. Ent. Soc., LV, p. 180

In considering the Notiphilinae, we should study Loew's treatment in his Neue Beiträge zur Kenntniss der Dipteren (above cited). There, however, he used the name Notiphilina, and based his group on characters followed by most students until the present. That I am not following him will be evident in these synopses in comparison with Loew's treatment.

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* In the second part of this series, on the tribe Hydrelliini, which appeared in these Transactions (LXX, 1944), the species *Hydrellia wilburi* was described on page 168. It has now come to my attention by Mr. G. E. Shewell of the Canadian Department of Agriculture, that this species had been previously described as *Diclasiopa frontalis* Curran (Amer. Mus. Novitates, no. 682, p. 7, 1933) from Quebec. Mr. Shewell has kindly sent me specimens which he compared with the type of Curran's species, and they prove to be conspecific with *wilburi*. However, Curran's name cannot be used in *Hydrellia* because it had previously been used for an European species, *Hydrellia frontalis* Loew, 1860. Consequently *Hydrellia wilburi* Cresson will stand.

[1] These Transactions, LXVIII, pp. 101–128, 1942, and LXX, pp. 159–180, 1944.

Key to the Nearctic Tribes of the Subfamily Notiphilinae

1. Posterior notopleural in normal position, close to ventral margin of notopleura..2
   Posterior notopleural removed dorsad from ventral margin.....*Hydrinini*
2. Ocellars seldom as strong as postocellars, usually much weaker; eyes pilose; humeral and supra-alar usually weak; facials weak, hair-like; mid tibial extensors absent...................................*Hydrelliini*
   Ocellars stronger than postocellars which are always weak; eyes bare; humeral and supra-alar strong; mid tibia usually with one to four erect extensors..*Notiphilini*

Tribe NOTIPHILINI new tribe

The species constituting this tribe are medium to large in size (2.5 to 5 millimeters in length). The eyes are bare; lunule not developed above line of antennae; ocellars always strong, generally much stronger than the postocellars, the latter often wanting or indistinguishable; posterior notopleural situated, normally, at ventral margin, and is weaker than anterior one; presutural, humeral and supra-alar present; mid tibia with one to four erect extensors, except Typopsilopa (all, however, weak in *Oedenops*).

Key to the Nearctic Genera of the Tribe Notiphilini

1. Mid tibiae without erect extensors; costa attaining vein IV; ocellars aligned with or caudad of anterior ocellus; shining black species **Typopsilopa**
   Mid tibiae with erect extensors; mostly opaque species................2
2. Costa extending to vein IV; antennal spine weak or undeveloped; ocellars widely separated, parallel, cephalad of line of anterior ocellus........4
   Costa not attaining tip of vein IV, rarely beyond III; antennal spine strong; ocellars approximate, diverging, rather caudad of line of anterior ocellus.. 3
3. Facials close to parafacies; frontorbital very strong; dark brown vestiture..**Dichaeta**
   Facials well removed from parafacies; frontorbitals weak; ochraceous to cinereous vestiture...**Notiphila**
4. Small species (2 to 2.5 mm.), entirely opaque, mostly cinereous species, without mesonotal setulae, but macrochaetae usually well developed, but no sternopleural...**Oedenops**
   Larger species (2 to 5 mm.), darker, with well developed mesonotal setulae and strong sternopleural........................**Paralimna**

OEDENOPS Becker

1903. Becker, Mitt. Zool. Mus. Berlin, II, p. 178.

Oedenops nuda (Coquillett)

1907. *Paralimna nuda* Coquillett, Jour. N. Y. Ent. Soc., x, p. 182.
1929. *Oedenops nuda* Cresson, Trans. Amer Ent Soc., LV, p. 183.

Originally described from Mexico, but known to me from Illinois, Mississippi, Texas and west to California. Not common.

PARALIMNA Loew

1862. Loew, Monogr. Dipt. No. Amer., I, p. 138.

Subgenus **Paralimna** Cresson

1916. Cresson, Trans. Amer. Ent. Soc., XLII, p. 105.

Paralimna (Paralimna) punctipennis (Wiedemann)

1830. *Notiphila punctipennis* Wiedemann, Aussereur. Zweifl. Ins., II, p. 590.
1862. *Paralimna appendiculata* Loew, Monogr. Dipt. No. Amer., I, p. 138.
1929. *Paralimna punctipennis* Cresson, Trans. Amer. Ent. Soc., LV, p. 184.

The most common North American species of the genus, but not known from the New England States, nor at present from Wisconsin, North Dakota, Delaware, West Virginia, Kentucky, Arkansas, Montana, Wyoming, Utah, Nevada, Idaho, Washington or Oregon. The females from the southernmost part of the United States are difficult to separate from those of the two following.

Paralimna (Paralimna) multipunctata Williston

1896. *Paralimna multipunctata* Williston, Trans. Ent. Soc. London, 1896, p. 390.
1916. *Paralimna ciliata* Cresson, Trans. Amer. Ent. Soc., XLII, p. 111, pl. 9, fig. 7.

Known from the southern parts of Florida, Texas, Arizona, and California. Not common, and difficult to distinguish from *texana*.

Paralimna (Paralimna) texana Cresson

1915. *Paralimna texana* Cresson, Entom. News, XXVI, p. 69.

A scarce species known from Missouri, Kansas, Oklahoma and Texas.

Subgenus **Phaiosterna** Cresson

1916. Cresson, Trans. Amer. Ent. Soc., XLII, p. 104.

Paralimna (Phaiosterna) decipiens Loew

1878. *Paralimna decipiens* Loew, Zeits. f. Gessam. Naturf., LI, p. 195.

Known from New Jersey, Indiana, Georgia, Florida, Mississippi, Louisiana, Texas, Arizona and California.

Paralimna (Phaiosterna) obscura Williston

1896. *Paralimna obscura* Williston, Trans. Ent. Soc. London, 1896, p. 391.

A Neotropical species, rare in southern Florida and probably will be found in southern Texas.

Key to the Nearctic Species of the Genus Paralimna

1. Dark, sometimes shining species, without any true cinereous surfaces; abdomen with or without olivaceous fasciae; eyes elongate; cheeks narrow (*Phaiosterna*) 3

   Opaque species with some cinereous or ochraceous areas, particularly on the pleura; abdomen with contrasting brown and cinereous fasciae; eyes rotund; cheeks broad (*Paralimna*) 2

2. Fore femur with complicate complete postflexor ciliation of close-set setae, some almost as long as diameter of femur; fore femur of males with anteroflexor ciliation of small normal setae

   punctipennis Wiedemann

   Fore femur with postflexor ciliation of a few widely separated setae, generally becoming more dense proximad and often absent distad; males with anteroflexor ciliation usually complete, of flattened curved setae ....**multipunctata** Williston

   texana Cresson

3. Species almost totally opaque, with distinct fasciae on abdominal tergites..**decipiens** Loew

   Species distinctly shining, with at most indistinct abdominal fasciae

   obscure Williston

DICHAETA Meigen

1830. *Dichaeta* Meigen, Syst. Beschr. Europ. Zweifl. Ins., VI, p. 61.

Dichaeta caudata (Fallen)

1813. *Notiphila caudata* Fallen, Handl. K. Svenska Vet.-Akad., XXXIV, p. 249.

1917. *Dichaeta caudata* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 65, pl. 2, figs. 7–11.

Ranging from Alaska to British Columbia, to Eastern Canada; Oregon to Maine, and south to Virginia, Missouri, Utah, and occurs in Florida. Unknown from south of the latitude of these states (except Florida) and from California.

Dichaeta atriventris Cresson

1915. *Dichaeta atriventris* Cresson, Entom. News, XXVI, p. 68.

The more common western species, from North and South Dakota, Colorado, New Mexico and westward.

NOTIPHILA Fallen

1813. *Notiphila* Fallen, K. Svenska Vet.-Akad, Hand., 1813, p. 248.

Many species of this genus can be distinguished only after intensive studies of large series from many localities. This difficulty is caused by the numerous apparently stable forms which break down the species limits. The study of the genitalia will probably clear up these problems.

Subgenus **Agrolimna** Cresson

1917. [*Notiphila*] subg. *Agrolimna* Cresson, Trans. Amer. Ent. Soc, XLIII, p. 48.

The species of this group have the facials relatively hair-like, in series extending well above mid-facial profile. The mid tibiae usually have the erect preapical extensor present; the palpi and antennae are usually black, and the mid femora and tibiae rarely have cilia on their flexor surfaces.

Notiphila (Agrolimna) atrisetis Cresson

1917. *Notiphila* [*(Agrolimna)*] *atrisetis* Cresson, Trans Amer. Ent Soc., XLIII, p. 52.

This species must not be confused with *occidentalis* and its relatives which have the abdominal fasciae more extensive, and the basal flexor seta of hind tarsus pale.

A species known to me from western Canada, Wyoming, Colorado, New Mexico, to the Pacific Coastal states except Oregon.

Notiphila (Agrolimna) macrochaeta Loew

1878. *Notiphila macrochaeta* Loew, Zeits. f. Gesam. Naturw., LI, p 192.
1917. *Notiphila* [*(Agrolimna)*] *macrochaeta* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 54, pl. 1, fig. 4.

A scarce species at present known to me from South Dakota, Missouri, Kansas, Texas and eastern Colorado.

Notiphila (Agrolimna) macrochaeta brachychaeta new subspecies

1917. *Notiphila macrochaeta* Cresson (in part), Trans. Amer. Ent. Soc., XLIII, p. 54.

Similar to typical *macrochaeta* but the black hind tarsal bristle in the males is shorter, scarcely more than one-third length of the metatarsus, and is somewhat undulated. The females are apparently not separable from those of the typical form.

Type.—♂; Pacific Grove, California, June, (W. H. Mann). [A.N.S.P. No. 6673.] [2]

Paratypes.—3♀; topotypical.

I have seen other specimens, not considered paratypes, from Idaho, California, Utah and Arizona.

This form occurs farther westward than the typical form, and was included in the records of *macrochaeta* in my 1917 paper.

Notiphila (Agrolimna) olivacea Cresson

1917. *Notiphila* [(*Agrolimna*)] *olivacea* Cresson, Trans. Amer. Ent. Soc., LXIII, p. 52.

1917. *Notiphila* [(*Agrolimna*) *olivacca*] var. *aenigma* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 54.

A common species ranging from Alaska, several districts in southwestern and southeastern Canada and most of the states north of Pennsylvania to Illinois, Kansas, Utah and northern California. I have not seen it from Maine and Minnesota.

Notiphila (Agrolimna) scalaris Loew

1862. *Notiphila scalaris* Loew, Monogr. Dipt. No. Amer., I, p. 134.

1917. *Notiphila* [(*Agrolimna*)] *scalaris* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 49.

A species occurring in Canada east of the Rocky Mountains and southward, east of Montana and Colorado, eastward to New Hampshire, south to North Carolina. Common within its range.

Notiphila (Agrolimna) atripes Cresson

1917. *Notiphila* [*Agrolimna*] *atripes* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 50.

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[2] This type specimen is the gift of Dr. A. L. Melander.

Not a common species; found with *scalaris* in some of the latter's range, however, with extensions into Wyoming, Colorado and Nevada, but more common westward. Known to me from Canada, Massachusetts, Michigan, Wisconsin, South Dakota, Wyoming, Colorado and Nevada.

Notiphila (Agrolimna) occidentalis Cresson

1917. *Notiphila* [(*Agrolimna*)] *occidentalis* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 51.

The common northwestern species; known to me from Yellowstone National Park, Utah, Idaho, Washington, Oregon and California. Possibly synonymous with *N. decora* Williston, 1893.

Notiphila (Agrolimna) occidentalis subsp. **minima** Cresson

1917. *Notiphila* [(*Agrolimna*) *occidentalis*] var. *minima* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 52.

A rare, small form of *occidentalis* known only from New Mexico. The facial vestiture is usually yellowish and tergite V of male is rather narrow, appearing longer than broad.

Notiphila (Agrolimna) sicca Cresson

1940. *Notiphila sicca* Cresson, Notulae Nat., Phila, no. 38, p. 8

A rare western species, known from Minnesota, South Dakota, Utah, Yellowstone National Park, Colorado, New Mexico, Nevada and California.

Notiphila (Agrolimna) pallidipalpis Cresson

1940. *Notiphila pallidipalpis* Cresson, Notulae Nat., Phila., no. 38, p. 8.

A rare species, easily confused with *scalaris,* but the palpi are orange.

Known from Canada, New Hampshire, Michigan and Wisconsin.

Notiphila (Agrolimna) bispinosa Cresson

1917. *Notiphila* [(*Agrolimna*)] *bispinosa* Cresson, Trans. Amer. Ent. Soc, XLIII, p. 58, pl. I, fig. 5.

A scarce species known from New Jersey, Maryland, Louisiana, Florida and Texas.

Notiphila (Agrolimna) furcata (Coquillett)

1902. *Dichaeta furcata* Coquillett, Jour. N. Y. Ent. Soc., x, p. 182.
1917. *Notiphila* [(*Agrolimna*)] *furcata* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 59, pl. II, fig. 6.

The males of this species have the *Dichaeta*-like spinous development on the terminal segment of the abdomen.

Known from Delaware, Florida, Louisiana and Texas.

Notiphila (Agrolimna) pulchrifrons Loew

1872. *Notiphila pulchrifrons* Loew, Berl. Ent. Zeits., XVI, p. 102. (Cent., x, no. 84.)
1917. [*Notiphila frontalis*] var. *signata* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 57.

A comparatively scarce species from Pennsylvania, Maryland, Indiana, Kansas, Georgia, Oklahoma, Texas, New Mexico, Arizona and California.

Subgenus **Notiphila** Cresson

1917. [*Notiphila*] subg. *Notiphila* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 31.

In this group, the facials are stronger than in *Agrolimna,* limited to three or four in the series, which latter does not, or scarcely, attains the mid-facial profile. The antennae and palpi are generally pale. The mid tibiae have only three extensors, the apical one being absent or minute.

Notiphila (Notiphila) vittata Loew

1862. *Notiphila vittata* Loew, Monogr. Dipt. No. Amer., I, p. 136.

A scarce species of eastern Canada and the United States.

Known from Massachusetts, New Jersey, Pennsylvania, Maryland, Virginia, Ohio, Indiana, Illinois, Missouri, South Carolina, Florida and Texas.

Notiphila (Notiphila) bella Loew

1862. *Notiphila bella* Loew, Monogr. Dipt. No. Amer., I, p. 135.

A very scarce species, known only by the five specimens from "Middle States" in the Museum of Comparative Zoölogy, and a female from Colorado.

Notiphila (Notiphila) nudipes Cresson

1917. *Notiphila* [(*Notiphila*)] *nudipes* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 93.
1930. *Notiphila latilimbata* Curran, Bull. Amer. Mus. Nat. Hist., LXI, p. 77.

A rare species known only from New York, New Jersey and Ohio.

The synonymy of *latilimbata* is here proposed after a study of the original description and the material at hand.

Notiphila (Notiphila) fulvimana Cresson

1917. *Notiphila* [(*Notiphila*)] *fulvimana* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 47.

This species is known only by two specimens (types) from California.

Notiphila (Notiphila) floridensis Cresson

1917. *Notiphila* [(*Notiphila*)] *floridensis* Cresson, Trans Amer. Ent. Soc., XLIII, p. 46.
1917. *Notiphila* [(*Notiphila*)] *cognata* Cresson, Trans Amer. Ent. Soc., XLIII, p. 46.

A very scarce species; known only from New Jersey and Florida.

The synonymy of *cognata* is proposed after studying additional material.

Notiphila (Notiphila) loewi Cresson

1862. *Notiphila unicolor* Loew (not Walker, 1860), Monogr. Dipt. No. Amer., I, p 137.
1917. *Notiphila* [(*Notiphila*)] *loewi* Cresson, Trans. Amer. Ent Soc., XLIII, p. 44.
1917. *Notiphila* [(*Notiphila*)] *biseriata* Cresson, Trans Amer Ent. Soc., XLIII, p. 46

A relatively common species from Canada, Maine, New Hampshire, Michigan, Minnesota, Ohio, Illinois, Tennessee, Florida, Wyoming, Colorado, Utah and Washington.

Biseriata appears to be only a variety.

Notiphila (Notiphila) carinata Loew

1862. *Notiphila carinata* Loew, Monogr. Dipt. No. Amer., I, p. 137.
1917. *Notiphila* [(*Notiphila*)] *bicolor* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 35.

Not as common as *loewi,* but with similar distribution.

Known from Canada, New Jersey, Pennsylvania, Michigan, Wisconsin, Minnesota, North Dakota, South Dakota, Maryland, Ohio, Indiana, Illinois, Missouri and Kansas.

The synonymy of *bicolor* is here established after examining the type of *carinata* in the Loew Collection.

Notiphila (Notiphila) erythrocera Loew

1878. *Notiphila erythrocera* Loew, Zeits. f. Gesam. Naturw., LI, p. 194.
1906. *Notiphila varia* Jones, Univ. Cal. Pub. Ent., I, p. 153.
1917. *Notiphila* [(*Notiphila*)] *erythrocera* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 36.

A variable species from New Jersey, Delaware, Kansas, Georgia, Florida, Louisiana, Texas, Wyoming, Colorado, Utah, Nevada and California.

The facials here are confined to a short series of two to three short, stout, setae; antenna III and tibiae are for the most part, pale.

Notiphila (Notiphila) avia Loew

1878. *Notiphila avia* Loew, Zetis. f. Gesam. Naturw., LI, p. 193.

A rare species known only from Alberta, South Dakota, Minnesota and Idaho.

Notiphila (Notiphila) reparia Meigen

1830. *Notiphila riparia* Meigen, Syst. Beschr. Europ. Zweifl. Ins., VI, p. 65.
1917. *Notiphila* [(*Notiphila*)] *riparia* Cresson, Trans. Amer. Ent. Soc., XLIII, p. 32.

A comparatively scarce species in North America, originally described from Europe.

Known from Massachusetts, New York, New Jersey, Michigan, Ohio, Kansas, Georgia, Florida and Louisiana.

The following species described in this genus are unknown to me

Notiphila producta Walker, List. Dipt. Brit. Mus., IV, p.. 1099, 1849. [St. Martins Falls, Hudson Bay.]

Probably referrable to *Parydra.*[8]

Notiphila repleta Walker, List. Dipt. Brit. Mus., IV, p. 1009, 1849. [St. Martins Falls, Hudson Bay.]

This is a member of the family Helomyzidae.[3]

Notiphila solita Walker, Dipt. Saund., I, p. 407, 1853. [United States.]

Possibly synonymous with *N. erythrocera* Loew.

Notiphila transversa Walker, Dipt. Saund., I, p. 407, 1853. [United States.]

Possibly synonymous with *N. furcata* Coquillett.[4]

Notiphila quadrisetosa Thomson, K Svenska Freg. Eugenies Resa, Zool., I, p. 594, 1868 [California.]

This may be the same as *N. occidentalis* Cresson. Cole[5] records this species from Laguna Beach, California.

Notiphila decoris Williston, Bull. U. S. Dept. Agr., Div. Ornith. & Mam., N. Amer. Fauna, VII, (2), p. 258, 1893. [California.]

Probably allied to *N. occidentalis* Cresson, or *N. olivacea*. Cole[6] records this species from Oregon.

Key to the Nearctic Species of the Genus Notiphila

1. Palpi entirely black.................................15
   Palpi pale, at least apically..........................2
2. Apical extensor of mid tibiae minute or absent; facials usually strong, in abbreviated series with at most but one seta above line of buccal orbit..........6
   Apical extensor of mid tibiae well developed; facials in full series extending well above line of buccal orbit..........3
3. Frons conspicuously vittate with black; antenna II pale **pulchrifrons** Loew
   Frons not conspicuously vittate; mesonotum not noticeably vittate...4
4. Antenna II pale; tergite V of males with two stout, long, apical bristles; brown faciae on tergites of females large, quadrate..**bispinosa** Cresson
   Antenna II black..........5
5. Marginal setae of tergite IV very long, about three to four times their distance apart; facial vestiture cinereous; tergite V of males with two long, stout, bristles..........**furcata** Coquillett
   Marginal setae of tergite IV not conspicuous, scarcely twice as long as their distance apart; facial vestiture yellow; tergite V of males normal..........**pallidipalpis** Cresson

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[3] As determined by Dr. E. E. Austen in a letter to me, Oct. 25, 1911.

[4] Dr. Austen writes in same letter: "[Belongs to the] Genus *Dichaeta* distinct from *D. caudata* (Fallen)."

[5] Rept. Laguna Beach Lab., I, p. 160, 1912.

[6] Proc. Cal. Acad. Sci., (4), XI, p. 334, 1912.

6. Lateral surfaces of scutellum not noticeably blackish..................9
   Lateral surfaces of scutellum quite black in cephalic aspect; mesonotum usually with a broad lateral stripe..................................7
7. Abdominal maculation fasciated, with median interruption, the caudal margin of dark fasciae straight....................**nudipes** Cresson
   Abdominal maculation guttate or fasciated, if latter the caudal margin of dark fasciae is not straight..................................8
8. Mesonotum without distinct dorsocentral brown stripes; hind tarsal fascicle[7] without black setulae..........................**bella** Loew
   Mesonotum with distinct dorsocentral brown stripes; tarsal fascicle with black setula; median pair of abdominal spots often attaining apices of tergites; ochraceous brown species with slender abdomen in the males, which is more or less depressed on dorsum.............**vittata** Loew
9. Tergite IV much longer than III; abdominal maculation recessive, seldom are the irrorations at setae absent. Unicolorous species, with pale antennae, tibiae, and tarsi....................**fulvimana** Cresson
   Tergite IV not or but slightly longer than III.....................10
10. Facials strong, in short series of two to three setae; arista with 10 to 14 hairs; abdominal maculation distinct, guttate, rarely fasciated.......13
    Facials hair-like, in full series extending well above line of buccal orbit; arista with 8 to 10 hairs, rarely with 12 in females...............11
11. Face and cheeks broad, the latter at least equalling length of antenna III; abdominal maculation recessive, particularly in the males......12
    Cheeks narrow, scarcely more than .5 length of antenna III, abdominal maculation guttate, in four series, or the spots connected narrowly at base, forming emarginated fasciae; irroration at setae often conspicuous...**carinata** Loew
12. Fore tibiae and tarsi pale [Florida]...............**floridensis** Cresson
    Fore tibiae and tarsi dark.............................**loewi** Cresson
13. General color of vestiture cinereous to ochraceous, not olivaceous; all tibiae mostly pale. Thorax at most with thin median mesonotal brown stripe and notopleural mark; antennae entirely pale; cheeks about equal to width of antenna III; abdominal maculation guttate, the brown spots in four series, rarely is the maculation fasciated; irrorations at setae very conspicuous..................**erythrocera** Loew
    General color of vestiture olivaceous; fore tibiae and tarsi dark......14
14. Cheeks broad, about equalling length of antenna III; generally opaque species, at most but faintly marked on thorax; tibiae dark except extremities..**avia** Loew
    Cheeks narrow, scarcely equalling width of antenna III; abdomen somewhat shining, strongly marked with four series of dark spots; mid and hind tibiae broadly pale at extremities...............**riparia** Meigen

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[7] The tarsal fascicle is the group of flexor setulae at base of hind metatarsus.

15. Dark fascia on tergite IV trigonal or at least narrowed laterally, scarcely more than attaining lateral margin; all of ventral lobes cinereous....19
    Dark fascia of tergite IV broadly attaining, and generally over-running, well onto ventral lobe; hind tarsal fascicle all pale...............16
16. Mesopleura with definite brown isolated mark; fascia on tergite III and IV, shining black, seldom brownish, sharply defined caudad; tergite V of males mostly shining black; mid and hind tarsi pale..**scalaris** Loew
    Mesopleura may be brownish but without the definite isolated brown mark (except in varieties of *olivacea,* in which species the vestiture is ochraceous rather than cinereous).............................17
17. Dark fascia on tergite IV sharply defined, the mesal part sometimes broadly produced to caudad margin..............................18
    Dark fascia on tergite IV seldom with sharply defined caudal margin, often occupying entire surface except the median cinereous stripe; antenna II always black; fore tarsi black; mid and hind tarsi pale **occidentalis** Cresson
18. All tarsi and antennae black; marginal setae of tergite IV short, scarcely .5 as long as tergite V; V of males rather long and narrow, with acute apex...... . ... **atripes** Cresson
    All tarsi and more or less of antenna III, pale; marginal setae of tergite IV longer; tergite V of males equilateral, rounded at apex, shining black with two gray spots but no median line of gray **sicca** Cresson
19. Hind tarsal fascicle entirely pale, dark abdominal fasciae or marks, brown, rarely black, trigonal, not attaining lateral margins on III, and rarely on IV, at most, subshining........ ....**olivacea** Cresson
    Hind tarsal fascicle with black setae.......... ... .20
20. The black seta in hind tarsal fascicle of males very long, at least 3 length of the metatarsus; tergite V of females with a mesal apical membraneous area; mid and hind tarsi and usually the extremities of tibiae, pale................................**macrochaeta** Loew
    The black seta in tarsal fascicle of both sexes, very short, scarcely longer than the pale setulae; frontalia distinctly black anteriorly or overcast with cinereous................ ... .**atrisetis** Cresson

Tribe TYPOPSILOPINI new tribe

This tribe is erected for the small *Psilopa*-like species having the eyes bare; lunule not developed; ocellars approximate, and strong, aligned with or caudad of line of anterior ocellus; antennal spine strong; dorsocentrals arranged 1:1 or 0:1; posterior notopleural not removed dorsad; mid tibiae without erect extensors; costa extending to vein IV .

TYPOPSILOPA Cresson

1916. Cresson, Entom. News, xxvii, p. 147.

Typopsilopa flavitarsis Cresson

1916. *Typopsilopa flavitarsis* Cresson, Entom. News, xxvii, p. 147.

Chiefly a Neotropical species, known from Florida, Georgia, Louisiana and Arizona.

Typopsilopa atra (Loew)

1862. *Psilopa atra* Loew, Monogr. No. Amer. Dipt., i, p 143.
1916. *Typopsilopa atra,* Cresson, Entom. News, xxvii, p. 147.

A rather common species ranging from Massachusetts westward to Oregon, south to Florida, Utah and California.

Key to the Nearctic Species of the Genus Typopsilopa

1. Facial bristles about at mid facial profile, their distance apart almost six times their distance from orbits; face strongly retreating below; fore tarsi always, and usually mid and hind tarsi, pale....**flavitarsis** Cresson

   Facial bristles distinctly below mid facial profile, their distance apart at most four times their distance from orbits; fore tarsi and usually the other tarsi, black...................................... ..**atra** (Loew)

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A SYSTEMATIC ANNOTATED ARRANGEMENT OF THE GENERA AND SPECIES OF THE ETHIOPIAN EPHYDRIDAE (DIPTERA)

I. The Subfamily Psilopinae

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In presenting this series, I am endeavoring to give future students of the African Ephydridae what may be termed a systematic catalogue or list of the species known to me or which have been described from this region, assigning them to their respective genera in accordance with my arrangement.[1] Those species which I have been unable to recognize are placed, if possible, on characters gleaned from their original descriptions, or as placed by their authors, or other students whom I consider qualified to do so. Some species are so inadequately described that even their family or generic status cannot be determined, and these are retained in their original assignments.

As the strictly Ethiopian Region coincides with, or overlaps the southern part of the Palaearctic Region in North Africa, I have arbitrarily established the northern limit on the Tropic of Cancer, which is latitude 23° 27′ north. This limit also includes the southern part of Arabia. However, particularly in the region of the Nile River, where much of my material was collected, I have included records from localities just north of that limit. The Seychelles Islands, from which Lamb (1912) recorded and described a number of species, is also included within the scope of

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[1] Two other series of similar studies are being prepared: (1) on the Neotropical species (for the first part see these Transactions, LXXI, pp. 129–163, 1946); (2) on the Indo–Australian species (for the first part see these Transactions, LXXXI, pp. 47–75, 1945).

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Pages 241–264 Issued December 20, 1946 1136.60

this series, although they are of the Oriental rather than the Ethiopian fauna. Madagascar and the Rodriguez Islands are also included.

For the material which has made this work possible, besides that in the collection of the Academy of Natural Sciences of Philadelphia [A.N.S.P.], I am indebted particularly to the authorities of the Deutsches Entomologisches Institut, Berlin-Dahlem [D.E.I.], Hawaiian Sugar Planters Association Experiment Station [Haw.], Imperial Institute of Entomology, London [I.I.E.], Transvaal Museum [T.M.], and the United States National Museum [U.S. N.M.].

General localities previously recorded for the species are given with the bibliographical references. Additional records, given in more detail, are of the material before me at this writing. Thus the known distribution of the species can readily be ascertained.

Subfamily PSILOPINAE

1925. Psilopinae Cresson, Trans. Amer. Ent. Soc., LI, p. 241.

This subfamily is well represented in the Ethiopian Region. I have present knowledge of twenty genera and twenty-nine species. Two genera and ten species I have not recognized in the material studied.

The species of this subfamily are very small (1 mm.) to medium size (2.5 mm.), with the head more or less disciform, circular or subelliptical in cephalic aspect, rarely broadest far above its transverse centerline; eyes rarely round and protruding; frontal (if present) reclinate; median facies bare, the facialia and facial series of setae practically parallel to, or concentric with the orbits, not converging dorsad to meet at the interfoveal carina; mouth generally narrow with distinct clypeus, never with oral cilia; dorsocentrals absent, but posterior intra-alar and generally the prescutellars, present; supra-alar rarely present.

Key to the Tribes of the Subfamily Psilopinae

1. Setation usually very much reduced; postbucca bare, extensive, with posterior margin sharp and usually reflexed or marginated; facialia usually pitted or rugulose, the facials situated in such depressions; antennae always simple, with arista sometimes bare................*Gymnopini*
   Setation well developed (except in the Discomyzini, which has the frons and face sculptured); if postbucca is extensive it is setulose and the posterior margin is not reflexed; facialia not noticeably sculptured (except in the Discomyzini and in the genus *Leptopsilopa*); facials may be situated on papillae but not in depressions..........................2
2. Posterior notopleural distinctly removed dorsad from the notopleural suture, sometimes well into the sutural angle; mostly opaque pruinose species..*Atissini*
   Posterior notopleural at or near the notopleural suture, horizontally aligned with the anterior notopleural..............................3
3. Ocellars situated cephalad of the line of, or in line with, the anterior ocellus; antennae of the *Gymnopa* type; mostly opaque pruinose species..*Discocerinini*
   Ocellars situated caudad of the anterior ocellus, sometimes between the posterior ocelli; antennae usually of the *Notiphila* type, with distinct antennal spine; mostly shining to polished species 4
4. Frons and face distinctly sculptured; three or more facials present and well removed from the parafacies; setation weakly developed; mesonotal setulae not seriated......................... .....*Discomyzini*
   Frons and face at most weakly sculptered medianly; rarely more than two facials present which are usually near the parafacies; setation well developed; mesonotal setulae usually distinctly seriated.......*Psilopini*

Tribe GYMNOPINI

1942. Gymnopini Cresson, Trans. Amer. Ent. Soc., LXVII, p. 103.

PARATHYROGLOSSA

1931. *Parathyroglossa* Hendel, Bull. Soc. R. Ent. Egypte, XV, p. 68.

Parathyroglossa ordinata (Becker)

1896. *Athyroglossa ordinata* Becker, Berl. Ent. Zeits., XLI, p. 135. [Europe.]
1931. [*Parathyroglossa*] *ordinata* Hendel, Bull. Soc. R. Ent. Egypte, XV, p. 68.

KENYA: Nairobi, VII, 1930, (V. G. L. Van Someren), [I.I.E., 1]. Ngong, (V. G. L. Van Someren), [I.I.E., 9].

It is possible that the above series is not conspecific with the European form, but my series of both are insufficient to consider the slight differences they show to be of specific importance.

ATHYROGLOSSA

1860. *Athyroglossa* Loew, Neue Beitr., vii, p. 12.

Athyroglossa argyrata Hendel

1931. *Athyroglossa argyrata* Hendel, Bull. Soc. R. Ent. Egypte, xv, p. 167. [Wadi Edeib, (Gebel Elba), Egypt.]

I do not know this species, but apparently it belongs to the *Athyroglossa* assemblage. Although not originally described from within our limits, it may eventually be found therein.

CHLORICHAETA

1923. *Chlorichaeta* Becker, Denkschr. Akad. Wissen. Wien, xcviii, p. 73.

This genus is separated from *Gymnopa* mainly in having the face very deeply pitted, which almost obliterates the median tubercle, and which sculpturing includes the mesal portion of the parafacies. In the known species the frons is smooth with only a suggestion of the ocellar tumor. Wings strongly lactaceous.

From the records before me the species of this genus occur about camels and cattle; *albipennis* was collected on camel sores, *tuberculosa* on cattle and even found (according to labels) on a coccid on a trunk of the China-tree in Angola, an environment at variance with the other records.

Chlorichaeta albipennis (Loew)

1848. *Gymnopa albipennis* Loew, Stet. Ent. Zeitung, ix, p. 14. [Europe.]
1910. *Gymnopa albipennis* Becker, Denkschr. Akad. Wissen. Wien, lxx, p. 154. [Sokotra.]
1925. *Chlorichaeta albipennis* Cresson, Trans. Amer. Ent. Soc., li, p. 235. [Egypt.]

This species was originally described from the southern part of Europe and occurs in the countries bordering on the Mediterranean. It has, however, been recorded from within the Ethiopian Region as here limited by Becker (1910).[2]

It simulates *tuberculosa* in many respects, but may be distinguished by the convex, relatively smooth scutellum.

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[2] Lamb (Trans. Linn. Soc., Lond., xv, Zool., p. 319, 1912) has recorded this species, as *Mosillus albipennis*, from the Seychelles Islands. His record may or may not apply to that species.

Chlorichaeta tuberculosa Becker

1923. *Chlorichaeta tuberculosa* Becker, Denkschr. Akad. Wissen, Wien, XCVIII, p. 74, fig. 6. [Egyptian Sudan.]

1925. *Chlorichaeta tuberculosa* Cresson, Trans. Amer. Ent. Soc., LI, p. 234. [Portuguese East Africa.]

DAHOMEY: Cotonon, VI 3, 5, (W. A. Lamborn), [I.I.E., 2]. NYASALAND: Chikonje, Rue, XII 16, (R. C. Wood; on cattle), [I.I.E., 8]. TANGANYIKA: Uvira, VIII 28–29, (L. Ogilvie), [I.I.E., 1]. ANGOLA: Lobito Bay, VII 19–20, (J. Ogilvie), (T. D. A. Cockerell; on *Hemichionaspis* on trunk of *Melia azedarach*), [I.I.E., 5]. NATAL: The Bluff, Durban, X, (Miss Mackie), [I.I.E., 1]. CAPE OF GOOD HOPE: Doorn River Falls, XI, (Miss Mackie), [I.I.E., 1].

This species differs from *albipennis* most noticeably in its flattened granulose scutellum.

Lamb's determination of *Mosillus albipennis* from Durban,[8] no doubt should have been referred to this species, but his record of the same from the Seychelles Islands probably is that of another species.

Chlorichaeta aerifer new species

Similar to *tuberculosa* but larger and the flat scutellum is of a bronze color strongly contrasting with the black mesonotum. In some respects it suggests *Gymnopa bracteata* (Schiner).

Pale, orange: extremities of tibiae, tarsus basad, mid tarsus entirely, hind tarsus except two apical segments. Mesal margin of parafacies and antennae III brownish; halteres lemon yellow; squamae white; wings lactaceous with pale veins.

Shining to polished, but following surfaces rather densely granulose: clypeus, mesonotum (has two niveous spots), more or less of pleura, metanotum (opaque), scutellum (which is bronze except extreme base), tergites medianly, and more or less of femora. Frons smooth, polished. Face showing the usual pitting and silvery or niveous maculation, but this sculpturing extends on to the broad parafacies as far ventrad as the cheeks.

Medifacies with lateral margins but slightly diverging ventrad. Cheeks somewhat broader than in *tuberculosa*. Scutellum broader than long, the apicals and about four laterals (each side) with small papillae at their bases. Femora quite large with the usual flexor comb of very stout spines, the proximal one very strong. Costa II about twice as long as III. Length, 3 mm.

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[8] Trans. Linn. Soc. London, Zool., xv, p. 319, 1912.

Type.—Female; Makussi, Angola; July 23, 1931; (J. Ogilvie); [Brit. Museum Natural History].

Paratype.—Female (head missing); Lobito Bay, Angola; July 19–26; (J. Ogilvie).

GYMNOPIELLA Cresson

1945. *Gymnopiella* Cresson, Trans. Amer. Ent. Soc., LXXI, p. 52.

Gymnopiella vansomereni new species

This species differs from the Oriental *G. paucula* (Cresson) in having strong postocellars, ocellars and frontals, but no postverticals. The mesonotal setulae are somewhat seriated; both notopleurals are strong; tergite I normal, as long as II; IV longer than III; V hardly visible; wings clear with dark veins; costa II about three times as long as III.

Black, shining species without vestiture; antenna III brown; arista with four hairs; tarsi pale; halteres white.

Length, 1.7 mm.

Type.—Male?; Ngong, Kenya; May, 1946; (G. V. L. Van Someren); [British Museum (Natural History)].

GYMNOPA

1820. *Gymnopa* Fallen, Dipt. Suec., Oscin, p. 10.

Gymnopa beckeri Cresson

1925. *Gymnopa beckeri* Cresson, Trans. Amer. Ent. Soc., LI, p. 231. [Egyptian Sudan.]

SOUTHERN RHODESIA: Matopo Hills, IV, (J. Ogilvie), [I.I.E., 1].

Although originally described from near Khartoun, the above individual seems to be conspecific with the type.

A true *Gymnopa,* characterized by the pale third antennal segment, the shining, more or less scabrous surfaces of the thorax, and the abdomen has a slight metallic bluish color. There are no isolated, definitely defined silvery spots on the face, but some such colored lines are in the parafacies region. The wings are yellowish with pale veins.

Gymnopa bracteata (Schiner)

1868. *Mosillus bracteatus* Schiner, Reise Novara, Zool., II, Abt. 1, Dipt., p. 244. [Cape of Good Hope.]

1925. *Gymnopa bracteatus* Cresson, Trans. Amer. Ent. Soc., LI, p. 232.

Not a typical species, but rather like those of the previous genus (*Chlorichaeta*) in having the sculpturing of the face more pitted than grooved, but without the silvery spots; the lower parafacies is strongly wrinkled and the wings truly lactaceous. The surfaces of the mesonotum and scutellum are densely granulose, the thorax and abdomen with bluish reflections. Femora somewhat thickened; also the mid tibiae, with flattened densely niveous anterior surface. Head not broader than high and rather strongly developed ventrad to a narrow mouth.

PLACOPSIDELLA

1901. *Placopsidella* Kertész, Termez. Fuzet., xxiv, p. 424.
1912. *Enchastes* Lamb, Trans. Linn. Soc., London, (2), Zool, xv, p. 319.

Placopsidella cynocephala Kertész

1901. *Placopsidella cynocephala* Kertész, Termez. Fuzet., xxiv, p. 425.
1912. *Enchastes scotti* Lamb, Trans. Linn. Soc. London, (2), Zool., xv, p. 320, pl. 15, figs. 21, 22. [Seychelles Islands.]
1925. *Placopsidella cynocephala* Cresson, Trans. Amer. Ent Soc., LI, p. 230. Synonymy of *Enchastes scotti.*

This species is included here because of its occurrence on the Seychelles Islands as *Enchastes scotti* Lamb.

Key to the Ethiopian Genera of the Tribe Gymnopini

1. Alula of the wings narrow, the inferior margin not convex.........5
   Alula of the wings broad, auriculate, its inferior margin strongly convex.. 2
2. Surfaces subopaque, more or less pruinose; face with a bare, longitudinal tubercle...........................**Placopsidella** Kertész
   Surfaces shining, at most sparingly pruinose; facial prominence round or subconical....... 3
3. Medifacies, including facialia, uniformly pitted, almost obliterating the median tubercle if the latter is in evidence..**Chlorichaeta** Becker
   Medifacial tubercle distinct, the facialia rather transversely rugulose or pitted..4
4. Arista bare or pubescent; only one notopleural present which is situated at the extreme posterior angle of the notopleura **Gymnopa** Fallen
   Arista with long dorsal hairs; two notopleurals present **Gymnopiella** Cresson

5. Face subhemispherically or subconically prominent medianly in profile; frontals and ocellars well developed, although they may be considerably appressed; two notopleurals present, the posterior one somewhat removed dorsad from the notopleural suture; mesonotal setulae in well-separated, distinct series; scutellum scabrose with approximate apicals; fore femur not greatly enlarged, without distinct flexor comb........................Parathyroglossa Hendel

Face rather evenly convex or the convexity, if present, is transverse Athyroglossa Loew

Tribe ATISSINI

1942. Atissini Cresson, Trans Amer. Ent. Soc., LXVIII, p. 103.

HECAMEDE

1939. Haliday, An. Nat. Hist., III, p. 224.

Hecamede albicans (Meigen)

1830. *Notiphila albicans* Meigen, Syst. Beschr. Europ. Zweifl. Ins, VI, p. 65. [Europe.]
1839. *Hecamede albicans* Haliday, An. Nat. Hist., III, p. 224.
1910. *Hecamede albicans* Becker, Denkschr. Akad. Wissen. Wien, LXXI, p. 154. [Sokotra.]

The Sokotra material, which I have seen, is conspecific with series from France.

Hecamede lacteipennis Lamb

1912. *Hecamede lacteipennis* Lamb, Trans. Linn. Soc. London, Zool, XV, p. 318, fig. 9 of wing. [Seychelles Islands.]
1926. *Hecamede lacteipennis* Bezzi & Lamb, Trans. Ent. Soc. London, 1925, p. 561. [Rodriguez Islands.]

This species is stated to be similar to the preceding, and the differences are given in Lamb's description. I have not seen this species.

ELEPHANTINOSOMA

1903. *Elephantinosoma* Becker, Mitt. Zool. Mus. Berlin, II, p. 179.

The general conformation of the species of this genus closely simulates that of the Palaearctic *Pelignus durrenbergensis* (Loew) but in the present genus the second vein of the wings is long, the setulation much weaker, and it differs in other features. From

Allotrichoma the known species are distinguished by the more uniform cinereous color of the vestiture, as well as by the weaker setulation and the straight or at most slightly conoid facial profile. All species have the third to fifth tergites silvery, almost obscuring the black ground color.

As there were two species originally included in this genus and no genotype designated, I hereby select the following species, *Elephantinosoma chnumi* Becker, as such.

Elephantinosoma chnumi Becker

1903. *Elephantinosoma chnumi* Becker, Mitt. Zool. Mus. Berlin, II, p. 180. [Elephantine Island, Egypt.]
1922. *Elephantinosoma chnumi* Becker, Denksch Acad. Wissen. Wien, XCVIII, p. 72. [Atbara, Egyptian Sudan.]
1926. *Elephantinosoma chnumi* Lindner's Flieg Pal. Reg., fam. 25, p. 95, figs. 113, 114.

I have seen specimens from both of the above cited localities.

In this species the cheeks are one-quarter to one-third height of head, and the mesonotal setulae are scarcely discernible.

Elephantinosoma perspiciendum Becker

1902. *Elephantinosoma perspiciendum* Becker, Mitt. Zool Mus. Berlin, II, p. 180, pl. 4c, fig. 43. [Elephantine Island, Egypt.]
1926. *Elephantinosoma perspiciendum* Becker, Lindner's Flieg. Pal. Reg., fam 56, p. 95.

Similar to *chnumi* but the setation is stronger, with four distinct series of mesonotal setulae present between the intra-alar series. The facial profile is more pronounced than in *chnumi*.

EGYPTIAN SUDAN: Halfa, IX 21, (A. Hussein; breeding in wet refuse at river edge facing cleaning plant), [I.I.E., 7].

ALLOTRICHOMA

1896. *Allotrichoma* Becker, Berl. Ent. Zeits., XLI, p. 121.

Allotrichoma argentipraetexta Lamb, Trans Linn. Soc. London, Zool., XV, p. 324, text-fig. 15 (of wing), 1912. [Seychelles Islands.]

This species (unknown to me) is stated to be shining black with sparse golden vestiture. It is probably not a member of this genus. It should be recognized from the full original description.

Allotrichoma aegyptium new species

Similar to *lateralis* but the face and pleura are cinereous.

Pale, brownish yellow are: the palpi and, for the most part, the legs, the femora being somewhat darker. Halteres white. Wings lactaceous with pale veins.

Opaque: the upper surfaces including tergites I and II somewhat brownish; frontal orbits, face, cheeks, antenna II, pleura and ventral surfaces, cinereous; tergites III to V somewhat niveous. Clypeus shining black.

Head slightly higher than long, about as wide as high. Eyes round. Frons convex in profile, at vertex about .5 width of head, strongly narrowing cephalad. Face in profile conically prominent at middle, with two strong facials, the uppermost aligned with buccal orbit. Cheeks broad, about .25 height of head. Arista with four hairs. Mesonotal setulae well developed, in about six to eight series between the intra-alar series. Genitalic structure cannot be definitely described because of the method of mounting. Vein II very long Length, 1 5 mm.

Type.—Male; Elephantine Island, near Assuan, Egypt; (Reimoser); [A.N.S.P., no. 6674].

Paratype.—1 ♂; with same data as type.

The series upon which this species is based was determined by me in 1929 as *Elephantinosoma perspiciendum* Becker.[4] Recent acquisition of another species of *Elephantinosoma* which I consider true *perspiciendum* corrects my previous erroneous identification.

In the collection of the Vienna Natural History Museum there should be a series of two specimens from "Elephantine Aeg. (Reimoser)" and one from "Atbara, Sudan, V 3 (Ebner)," which I determined as *perspiciendum* Becker. Some of these may be the present species.

ATISSIELLA

1918. *Atissiella* Cresson, Trans. Amer. Ent. Soc., XLIV, p. 55.

Atissiella africana (Cresson)

1943. *Atissa africana* Cresson, Notulae Nat., Phila., No. 121, p. 1. [Dohne, Cape of Good Hope.]

Although the face does not possess the median pair of upcurved setae, so characteristic of other members of this genus, the conically prominent medifacies influences me in assigning the species here.

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[4] Trans. Amer. Ent. Soc., LV, p. 176.

Key to the Ethiopian Species of the Tribe Atissini

1. Face with prominent, shining median tubercle, cheeks ample, setulose; mesofrons setulose, scutellum with more than four marginal setae **Hecamede albicans** (Meigen)
   Face may be conically prominent, but it is not shining medianly; mesofrons not setulose; scutellum with four marginal setae......2
2. Frontals about aligned with, not cephalad of, the ocellars, the latter cephalad of anterior ocellus; face conically prominent well above epistoma..3
   Frontals cephalad of line of ocellars, the latter caudad of line of anterior ocellus......................**Atissiella africana** Cresson
3. Setation well developed; strong frontorbitals; face, in profile, conically prominent medianly; abdomen entirely black; legs dark **Allotrichoma aegyptium** new species
   Setation weak; proclinate frontorbitals weak or absent; face in profile straight or slightly conoid; abdomen yellowish proximad; legs yellow..... ....**Elephantinosoma** Becker

Tribe DISCOCERININI

1942. Discocerinini Cresson, Trans. Amer. Ent. Soc., LXVIII, p. 104.

DISCOCERINA

1835. *Discocerina* Macquart, Hist. Nat. Ins., Dipt., II, p. 527.

Discocerina obscurella (Fallen)

1813. *Notiphila obscurella* Fallen, Handl. K. Svenska Vet. Akad., XXXIV, p. 251. [Europe.]
1926. *Discocerina obscurella,* Bezzi & Lamb, Trans. Ent. Soc. London, 1925, p. 561. [Rodriguez Island.]

I have not seen any African material of this species, and am taking Bezzi's determination as correct.

POLYTRICHOPHORA

1924. *Polytrichophora* Cresson, Entom. News, XXXV, p. 161.

Polytrichophora australis new species

Similar to the Neotropical *Polytrichophora borigueni*[5] Cresson in possessing distinct parafacies setulae, but the head is somewhat more transverse, broader than high.

Pale, mars brown to more yellowish: parafacies, antennae except dorsal surfaces, palpi, all coxae, extremities of femora (but hind ones may be somewhat infuscated medianly), and all tarsi. Wing veins pale. Halteres whitish.

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[5] Entom. News, XLI, p. 77, 1930.

Opaque, brownish, becoming whitish ventrally; abdomen more blackish. Medifaces ochraceous; facialia and cheeks, whitish, which color extends narrowly along frontal orbits.

Head slightly broader than high; frons quadrate or slightly elongate, about .3 width of head. Face at antennae, distinctly narrower than frons; orbits distinctly flaring to the narrow cheeks, in profile quite prominent ventrad of middle, then strongly retreating to epistoma. The primary series of two strong mesally curved facials well ventrad, and a third, uppermost, well separated from the next below and somewhat weaker. The secondary series of about three setae, all dorso-laterally inclined, the uppermost, more strongly inclined, and situated almost between the uppermost primaries, and more strongly inclined dorsad. The mesally inclined setulae laterad of upper primary, distinct. Some down-curved parafacies setulae are discernible under 50 diameters magnification. Parafacies and cheeks about .5 width of antenna III. Antennae normal. Notopleura setulose. Costa III .6 as long as II. Length, 2 mm.

Type.—Female; "N. Oudtshoorn," Cape Province; October, 1931; (A. Mackie); [British Museum (Natural History)].

Paratypes.—1 ♀; Doorn River, Cape Province; November, 1931; (A. Mackie); [I.I.E.]. 1 ♀; East London, Cape of Good Hope; V 16, 1925; (H. K. Munro); [T.M.].

Polytrichophora albigenae new species

As compared with *australis,* this is a smaller species, similarly colored, but with the parafacies and cheeks niveous; the lateral and apical margins of abdomen gray. Face more uniformly white than in *australis;* parafacies setulae not discernible.

Head not broader than high; upper secondary facial less dorsally inclined; parafacies and cheeks about as broad as antenna III. Costa II and III subequal in length. Length, 1.6 mm.

Type.—Male; East London, Cape of Good Hope; May 21, 1925; (H. K. Munro); [Transvaal Museum].

HECAMEDOIDES

1917. *Hecamedoides* Hendel, Deut. Ent. Zeits., 1917, p. 41.

Hecamedoides costalis (Loew)

1860. *Hecamede costalis* Loew, Neue. Beitr., VII, p. 14. [Turkey.]
1903. *Clasiopa costalis* Becker, Mitt. Zool. Mus. Berlin, II, (3), p. 160. [Egypt: Assam.]
1922. *Clasiopa costalis* Becker, Denksch. Akad. Wissen. Wien, XCVIII, p. 72. [Egypt: Atbara.]

1926. *Hecamedoides costalis* Becker, Lindner's Flieg. Pal. Reg., Fam. 55, p. 45.

1929. *Hecamedoides costalis* Cresson, Trans. Amer. Ent. Soc., LV, p. 167. [Egypt: Atbara.]

This species has not heretofore been recorded south of Atbara in the Berber district, Anglo-Egyptian Sudan. I now report it from Khartoum, VI 18, (H. W. Bedford; swarming over irrigation channels), [I.I.E., 16].

The species apparently extends into the true Ethiopian Region on evidence of a specimen before me from "Uvua"? Belgian Congo, VIII, (Miss Mackie), [I.I.E.], which appears to be the same as the series from Khartoum, but critical examination is deterred by the poor condition of the specimen.

The species is distinguished from the Palaearctic *H. glaucella* (Stenhammar) by the more ample face which is less tuberculous, more evenly convex. It is more fully characterized in my 1929 paper, which reference also states that its assignment to *Hecamedoides* was new. This is incorrect, as Becker in 1926 had already done so.

Hecamedoides africana new species

This species is similar to *H. costalis* (Loew), but the antennae are dark, face narrower and the cheeks broader. The specimen upon which this description is based is considerably damaged, possessing but one antenna; the middle legs missing and the others considerably covered by the mounting medium, which however does not completely obliterate their color.

Pale are the base of antenna III, apices of femora, all tibiae and tarsi, as well as the wing veins. Hind tibia somewhat infuscated medianly.

Entirely opaque, densely pruinose; ochraceous on dorsal surfaces of head and thorax, becoming more whitish ventrad, including face. Abdomen whitish, but dorsum except broad margins somewhat blackish.

Head about as broad as high. Frons .6 width of head, about as broad as long; frontorbitals slightly cephalad of line of anterior ocellus, also a second, smaller orbital almost aligned with lunular margin. Face about .4 width of head, about 1.5 as long as broad, with distinct foveae and carina; two strong facials; also a minute papilla at base of upper facial. Cheeks very broad, at least equalling length of antenna II and III together; postbuccal margin quite sharp, suggesting the *Gymnopa* characteristic. Antennae normal, the spine of II not noticeably strong. Prescutellars weak but distinct; notopleura bare. Hind tibial spur well developed. Venation normal. Length, 2.4 mm.

Type.—Female? Kaifuchi, Angola; July 23, 1931; (J. Ogilvie); [British Museum (Natural History)].

DICLASIOPA

1917. *Diclasiopa* Hendel, Deut. Ent. Zeits., 1917, p. 42.

I have seen two poorly preserved specimens apparently of this genus from the southern Cape Provinces, but which I will not attempt to describe.

The dorsally curved setula on the lower part of the facialia is very difficult to see because of its being covered by the mounting medium.

Doorn River Falls, Cape Province, IX, 1931, (Miss Mackie); Van Rhyns Pass, Cape Province, XI, 1931, (A. Mackie); [all I.I.E., 2].

Key to the Ethiopian Genera of the Tribe Discocerinini

1. Face with a secondary series of dorsolaterally inclined setae laterad of the primary facials; eyes and notopleura pilose (*Polytrichophora*)..4

   No true secondary series laterad of facials........ 2

2. Notopleura setulose, and/or the anterior notopleural removed caudad nearer posterior notopleural than to the humeral; shining to dark opaque species with parafacies and cheeks relatively narrow **Discocerina** Macquart

   Notopleura bare, and anterior notopleural situated more cephalad, about equidistant between humeral and posterior notopleural; opaque densely cinereous pruinose species with parafacies and cheeks rather broad..3

3. Face with series of two primaries and a more or less well developed dorsally inclined setula at lower part of facialia near parafacies **Diclasiopa** Hendel

   Face with series of three primaries; no dorsally inclined setula in lower portion of facialia; usually a distinct papilla at base of upper facial (*Hecamedoides*)..................................5

4. Parafacies and cheeks broad, niveous, about equalling width of antenna III, the former bare......**Polytrichophora albigena** Cresson

   Parafacies and cheeks cinereous, narrow, about .5 width of antenna III, the former with series of minute setulae **Polytrichophora australis** Cresson

5. Face broad, with two subequally strong facials; antennae pale **Hecamedoides costalis** (Loew)

   Face relatively narrow, with three subequally strong facials; antennae black.....................**Hecamedoides africana** Cresson

Tribe PSILOPINI

1942. Psilopini Cresson, Trans. Amer. Ent. Soc., LXVIII, p 105.

ACANTHONOTIPHILA

1912. *Acanthonotiphila* Lamb, Trans. Linn. Soc. London, Zool., xv, p. 316.

The absence of dorsocentrals, the presence of a strong supra-alar, the *Notiphila*-like antennae, the short second vein and the setose first section of the third vein, suggests membership in the *Actocetor* assemblage.

Acanthonotiphila coreacea Lamb

1912. *Acanthonotiphila coreacea* Lamb, Trans. Linn. Soc London, Zool., xv, p. 316, text-fig. 8; pl. 15, fig. 23. [Seychelles Islands.]

I do not know this species.

ACTOCETOR

1903. *Actocetor* Becker, Mitt. Zool. Mus Berlin, II, p. 169.

Actocetor margaritata (Wiedemann)

1830. *Ephydra margaritata* Wiedemann, Äussereur Zweifl Ins, II, p. 594. [Egypt.]

1903. *Actocetor margaritata,* Becker, Mitt Zool. Mus. Berlin, II, p. 170, pl. 4c, figs. 27–29.

ANGLO-EGYPTIAN SUDAN: Heliopolis, X 20, (E. Hargraeves); Khartoum, III 9, (H. W. Bedford; on damp mud); Um. Baghot, VIII 22, (C. M. Darling; "among hantut"); Killing, Jebel Murra, Darfur, 7000 ft. alt., IV 7; (M. Steele); [all I.I.E., 6].

SOUTHERN RHODESIA: Salisbury, V 22, V 19, XI 15, (A. Cuthbertson; ex nest *Bembex* and *Stizus*), [I.I.E., 5].

This species has the wings broad, the clear spots large, often coalescing on basal portion of the wing; two in the marginal cell. Tergite IV usually with an opaque, cinereous or ochraceous fascia.

Actocetor hendeli Meijere

1917. *Actocetor beckeri* Hendel (not of Meijere, 1916), Deut. Ent. Zeits., 1917, p. 41. [Algoa Bay, Cape of Good Hope.]

1924. *Actocetor hendeli* Meijere, Tijd. v. Ent., LXVII, p. 202.

This is probably a variety of *margaritata* with the coxae and femora dark, and the abdomen without the pollinose fascia; it can hardly be *Poecilostenia decemguttata* Becker because Hendel would certainly have noted the peculiar form of the wings of that species. I have not seen this form.

POECILOSTENIA

1908. *Poecilostenia* Bezzi, Deutsch. Nat. Ges., Jena, XIII, p. 195.

This genus is not markedly different from *Actocetor* except in the long narrow wings which lack the alula and its cleft. There is, however, a deep costal cleft with strong seta at tip of first vein.

Poecilostenia decemguttata Becker

1908. *Poecilostenia decemguttata* Becker, Deutsch. Nat. Ges., Jena, XIII, p. 195, fig. 4a, 4b. [Kalahari, Kang-Khakhea, Bechuanaland.]
1933. *Actocetor abnormatipennis* Seguy, Mem Mus. Zool. Coimb., (1), No. 67, p. 40, fig. 16. [Mozambique]

NATAL: Wennen, XI, (H. P. Thomasset), [I.I.E., 3].[6]

I can see no difference between the above cited descriptions, so must consider Seguy's species synonymous.

The wings here are very narrow, with no alula, the clear spots small, round, not coalescing in basal area of the wing, and but one in the marginal cell. Tergite IV without opaque fascia.

CLASIOPELLA

1914. *Clasiopella* Hendel, Suppl. Entom., III, p. 109.

Clasiopella uncinata Hendel

1914. *Clasiopella uncinata* Hendel, Suppl. Entom., III, p. 110. [Formosa.]

KENYA: Mombasa, XI 7; 1938, I 12, 1939, (C. B. Snyder, D.133; aeroplane. D.140), [I.I.E., 2]. "Kenya Colony," XII 17, 1934, (C. B. Snyder; aeroplane. D.143), [I.I.E., 1].

The above series do not offer any differentiation from the Indo-Australian series I have seen of this species. The above material was captured, as noted, on or about aeroplanes.[7]

Clasiopella nervimaculata (Becker)

1910. *Ephygrobia nervimaculata* Becker, Denksch. Acad. Wissen. Wien, LXXI, p. 154. [Aden, Arabia.]
1925. *Clasiopella nervimaculata* Cresson, Trans. Amer. Ent. Soc., LI, p. 249.

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[6] Specimens of this record have been returned to I.I.E. under the name of *Actocetor abnormalipennis*.

[7] It is interesting to note that I have seen other material, captured on or about transpacific planes. (Trans. Amer. Ent. Soc., LXXI, p. 68, 1945.)

I know this species only from two of the original type series. The legs are entirely pale, and the posterior crossvein has a more or less distinct cloud. The face has a second, lower, facial, almost as strong as the upper one and very low.

This is one of the species belonging to a group intermediate between *Clasiopella* and *Psilopa*. It will not satisfactorily go in *Psilopa* nor more so in the present genus. My material, of this and other allied species constituting this intermediate group, is not sufficient nor marked enough to consider proposing another genus.

PSILOPA

1823. *Psilopa* Fallen, Dipt. Suec., Hydrom., p. 6.

Psilopa nilotica (Becker)

1903. *Ephygrobia nilotica* Becker, Mitt. Zool. Mus. Berlin, II, p. 157. [Khartoum.]
1907. *Psilopa nilotica* Bezzi, Bull. Soc. Ent. Ital., XXXIX, p. 189. [Eritrea.]
1925. *Psilopa nilotica* Cresson, Trans. Amer. Ent Soc., LI, p. 246. Note.

I know this species only by a few specimens of the type series. It is recognized by the rather narrow, flattened, pollinose face, which is more flattened than in *compta,* with the orbits less flaring ventrad. The legs are entirely yellow.

Psilopa angola new species

Similar to *P. nilotica* (Becker), but has all the femora black. It cannot be *P. antennata* Becker, from Kenya, which was described as having the face "chalybaea lucida" and only the hind tarsi pale.

Male. Pale, yellow: antennae entirely, apices of femora, all tibiae and tarsi (but fore and hind tibiae sometimes infuscated medianly), wings and veins. Halteres white.

Shining to polished with some metallic colors except the cinereous face which is more niveous on the parafacies, and is slightly dusted on the dorsal surfaces, excepting the two apical tergites.

Structurally not appreciably different from *nilotica*. Head much broader than high (as 6:4); frons slightly broader than long; face moderately narrow, transversely flattened but convex in profile; orbits strongly flaring to the almost linear cheeks. Antenna III slightly elongate; spine slender, long; arista with 6 to 8 hairs. Wings rather longer than usual.

Female similar but frons shorter and fore legs are entirely black.

Type.—Male; Kapeio, Angola, Africa; July, 1931; (T. D. A. Cockerell); [British Museum (Natural History)].

Paratypes.—1 ♂, with same data; 2 ♀, with same data but collected July 22, 1931.

In addition to the type series, I have seen the following material: BELGIAN CONGO: Elizabethville, IX 11–17, (A. Mackie), [I.I.E., 3]. Kafubu Mission, Katanga, IX, (A. Mackie), [I.I.E., 2]. TRANSVAAL: IV, 1932, (Louis Trichardt), [I.I.E., 1]. CAPE PROVINCE: Cabvania, IX, (A. Mackie), [I.I.E., 1]. Ceres, II, (A. Mackie), [I.I.E., 1]. NATAL: Amanzimtoti, X, (A. Mackie), [I.I.E., 1].

Psilopa iceryae new species

A member of the Polita Group, with tibiae and tarsi pale. Almost identical with the Oriental *P. flavimana* Hendel; apparently differing only in the shorter scutellum. It cannot be *P. antennata* Becker from Kenya as that species was described as having seven aristal hairs and the tibiae dark.

Pale, yellow: antennae (except III more or less infuscated), apices of femora, all tibiae (except sometimes fore tibiae slightly infuscated medianly), all tarsi, and wings and wing veins. Halteres white.

Uniformly highly polished, with some metallic colors, very sparsely brown pollinose on mesonotum and abdomen.

Head very broad, with breadth to height as 7 : 4. Frons at least twice as broad as long, and about .5 width of head. Face narrow, contained in width of head as 15 : 70, twice as long as broad, very convex, with weak foveal sulci; lower orbits strongly flaring to moderate cheeks which latter in width are about equal to width of antenna III. Arista with 10 hairs. Costa III slightly longer than II. Length, 1.6 mm.

Type.—Male; Njala, Sierra Leone; (Hargraeves; ex. *Icerya*, no. 561, em. XII 19, 1932); [British Museum (Natural History)].

Paratype.—1 ♀; topotypical, with pupa case.

Psilopa mackiei new species

Somewhat similar to the Nearctic *P. aeneonigra* Loew which is not a typical *Psilopa* because of its broad, feebly sculptured face. The facialia are more or less defined, thus differentiating the parafacies. The broad face, with strongly flaring orbits, is rather uniformly convex, and the feebly indicated facialia are strongly divergent ventrad; the cheeks in consequence very broad, about equalling the length of the elongated third antennal segment.

Pale, yellow: antennae, apices of mid and hind femora, and all tarsi (but fore tarsi more whitish), wings and veins, and halteres. Palpi black.

Shining, with sparse brown dusting except abdomen laterad and apicad; with some metallic colors on dorsal surfaces.

Structurally similar to *P. polita*. Head distinctly broader than high; eyes oblique. Frons strongly transverse; areas somewhat differentiated, particularly the depressed medifrons at lunular margin; strong ocellars just cephalad of posterior ocelli; postocellars weak, lateroclinate. Face broad, not prominent in profile, with strongly flaring orbits, rather uniformly convex; facialia feebly indicated above and likewise diverging ventrad, the narrow parafacies and facialia fairly well defined at cheeks by three more or less relieved lines of two shallow grooves; series of two subappressed, strong mesally curved facials, of which the uppermost is slightly above line of buccal orbit. Antenna I just visible; II not typically Psilopine, without superior lobe but with distinct curved, rather slender spine; III longer than broad; arista with about six hairs. Mesonotal setulae distinctly seriate; prescutellars well developed as far apart as their distance from scutellar base, almost aligned with the strong intra-alars. Scutellum almost as long as broad; apicals strong, slightly diverging; laterals almost as strong, and situated very near base. Abdominal tergites but slightly progressively longer apicad. Legs and wings normal.

Type.—Female; Oudtshoon, Cape Province; October 1931; (Miss A. Mackie); [British Museum (Natural History)].

This specimen was damaged after the above description had been drafted, destroying the antennae and one wing.

Psilopa antennata Becker, Ann. Soc. Ent. France, LXXXIII, p. 130, 1914. [Kenya.]

I cannot recognize this species in the material before me, but it seems to belong to *Psilopa*. It is described as shining to polished, with metallic colors; antennae pale with the third segment darker; legs except hind tarsi are black.

Psilopa nitidissima Lamb, Trans. Linn. Soc., London, Zool., XV, p. 322, 1912. [Seychelles Islands.]

A species stated by the author to be "very closely related to . . . *P. compta* Meigen," but is "much more shining, having brilliant green and coppery, or purplish reflections instead of pure green." Also the second vein is shorter and "the tibiae are all blackened in the middle."

Psilopa polita Becker (not Macquart), Denksch. Akad. Wissen. Wien, xcviii, p. 172. [Anglo Egyptian Sudan.]

This is a misidentification. Becker's record applies to a species of *Typopsilopa.*

Psilopa longicornis Lamb, Trans. Linn. Soc. London, Zool., xv, p. 323, text-fig. 14, pl. 15, fig. 16. [Seychelles Islands.]

From the description and figures this species seems to belong to the *Rhynchopsilopa* assemblage; the elongate antennae being one of the characteristics of that genus, but on the other hand it may belong to *Ceropsilopa.* I do not think it is a true *Psilopa.*

LEPTOPSILOPA

1922. *Leptopsilopa* Cresson, Entom. News, xxxiii, p. 136.

Leptopsilopa africana new species

Belonging to the species group containing the Indo-Australian *Ephygrobia pollinosa* Kertész, 1901, which species is placed in *Leptopsilopa* by Cresson.[8] However, neither of these species are typical of the genus, and in their facial structure resemble some species of *Ceropsilopa.*

The present species differs from *pollinosa* in its larger size, noticeably broader face, the more thinly pollinose mesonotum and abdomen, the latter somewhat bronze in contrast with the slightly bluish mesonotum; fore tarsi are intensely black, concolorous with the tibiae.

Type.—Female; Naivasha, Kenya, Africa; March, 1937; (H. J. A. Turner); [British Museum (Natural History)].

CEROPSILOPA

1917. *Ceropsilopa.* Cresson, Entom. News, xxviii, p. 340.

Ceropsilopa opulens Cresson

1925. *Ceropsilopa opulens* Cresson, Trans. Amer. Ent. Soc., li, p. 252. [Madagascar.]

1939. *Batula opulens* Cresson, Acad. Nat. Sci. Phila., Notulae Nat., No. 38, p. 3.

Tanganyika: Tshibinda, VIII 21–27, (J. Ogilvie), [I.I.E., 2; U.S.N.M., 1]. Natal: Amanzimtoti, X 16, (T. D. A. Cockerell), [I.I.E., 1].

Face evenly weakly convex, polished, not prominent in profile.

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[8] Trans. Amer. Ent. Soc., li, p. 251, 1925.

Ceropsilopa lacticella new species

A species belonging to the more typical group in having a narrow, subcarinate face. Unfortunately the unique type is somewhat damaged, precluding a more critical description; and furthermore the general pale color suggests a teneral condition.

General color ochraceous, the antennae and abdomen blackish; all surfaces more or less clothed with dense pollinose vestiture, rendering them opaque. Legs entirely yellow. Wings more or less infuscated between costa and vein III, particularly in the marginal cell, and also inferior to vein IV beyond the posterior crossvein, the latter noticeably clouded; first posterior and discal rather lactaceous depending upon the illumination and aspect. Frons grayish, dark laterally; face ochraceous with dark median stripe ventrad. Mesonotum brownish, lighter cephalad; scutellum yellowish; pleura also yellowish, becoming gray or white ventrad. Abdomen brownish, apparently variegated with grayish.

Frons transverse with well developed setae. Face (broken) apparently much narrower than frons and longitudinally obtusely carinate, with a pair of strong cruciate facials at epistomal margin (not two pairs). Cheeks linear. Strong prescutellars, removed from posterior margin a distance almost equal to length of scutellum. Wings rather narrow; vein II almost straight to costa; costa II 1.5 as long as III. Length, 1.8 mm.

Type.—Female; Uvira, Tanganyika; August 28–29, 1931; (T. D. A. Cockerell); [British Museum (Natural History)].

RHYNCHOPSILOPA

1913. *Rhynchopsilopa* Hendel, Suppl. Entom., II, p. 96.

Rhynchopsilopa apicalis Collin

1921. *Rhynchopsilopa apicalis* Collin, Trans. Ent. Soc. London, 1921, p. 509. [Southern Nigeria.]

Sierra Leone: Njala, VIII, II, (E. Hargraeves), [I.I.E., 1].

This species is recognized by the clouding in the apical part of the wings.

Rhynchopsilopa laevigata new species

Differing from *nitidissima* Hendel, described from Suez, Egypt, but agreeing with *apicalis* Collin, from Southern Nigeria, in possessing the pair of median sutural setae on the mesonotum, simulating true dorsocentrals. The frons lack any differentiation of the mesofrons, being polished to the base of the prominent ocellar tumor, and the wings lack the apical infuscation.

Pale, yellow to orange: face, cheeks, palpi, fore coxae, apices of femora, all tibiae except sometimes median infuscation, and all tarsi. The prominent epistoma is inclined to whitish in the males. Frons rather translucent brown and antenna III is mostly brown. Wings and veins pale. Halteres knob, white.

Entirely polished with metallic reflections, except on scutellum, the somewhat pollinose ocellar tumor, the upper portion of pleura, the metanotum, and ventral lobes of abdomen. Postbucca niveous.

Head broader than high (as 55:35), about as long as high; eyes rotund. Frons almost .5 as broad as head, about .5 as long as broad; subconically produced at antenna; ocellar tumor prominent. Ocellars almost as strong as the strong frontorbitals. Face about .3 width of head and slightly longer than broad; rather sharply carinate medianly and ventrad to a distinct transverse sulcus just dorsad of the prominent epistoma; about six fine short hair-like facials ventrad, the series extending well toward the cheek. The latter narrow, with strong buccal bristle. Palpi prominent, with a strong black seta; proboscis about as long as height of head. Antenna III densely long pilose; arista with 10 rather short hairs which diminish in length apicad.

Mesonotal setulae fine and pale, rather sparse, none in the acrostichal series and few antesutural in the dorsocentral series; one pair of strong setae (but not dorsocentrals) at the sutural region, but no prescutellars.

Abdomen subglobose, with discal and marginal setae on tergites III to V; those on the females are very long, suberect; those on the males more appressed and less distinct; tergite VI of males large, with a deep marginated U-shaped apical cleft, nearly encircling the anal segment.

Wings with costal section I not unusually thickened; II about four times as long as III. Vein II very long, III and IV parallel, slightly curving inferiorly. Length, 2 to 2.5 mm.

Type.—Male; Chilanga, Northwestern Rhodesia, 1400 feet alt.; September 18, 1913; (R. C. Wood; in house); [British Museum (Natural History)].

Paratype.—♀ with same data.

NYASALAND: Fort Johnson, XII 20, (W. A. Lamborn), [I.I.E., 1]. A poorly preserved specimen with the pale areas darkened, particularly the face, palpi, legs and halteres.

Key to the Ethiopian Genera and Species of the Tribe Psilopini

1. Supra-alar present and strong; basal section of vein III with dorsal setae....................................**Actocetor Becker**
Acanthonotiphila Lamb

Supra-alar absent or minute; vein III without dorsal setae.........2

2. Antenna I but slightly exserted, if at all. Rather trigonal, with stout, rarely weak, superior apical seta (antennal spine)..............3
   Antenna I elongate, well exserted; II inversely conical, at most with curved, hair-like apical seta; III sometimes very long...........7
3. Face with two subequal facials, at lower part of profile **Clasiopella uncinata** Hendel
   Face with one facial (rarely a smaller one below)................4
4. Fore legs entirely and mid and hind femora, black; face transversely rugulose......................**Leptopsilopa africana** new species
   Fore tibiae and tarsi, pale; face smooth, polished or sparsely niveous.5
5. Legs entirely pale.......................**Psilopa nilotica** (Becker)
   All femora black..6
6. Face polished........................**Psilopa iceryae** new species
   Face sparsely niveous.................**Psilopa angola** new species
7. Face long and narrow, flat or depressed, with sharp, prominent epistoma; antenna III attaining epistoma (*Rhynchopsilopa*).......9
   Face not unusually long and narrow, with retreating epistoma (*Ceropsilopa*)..8
8. Opaque, cinereous to ochraceous species, with marginal cell infuscated..........................**Ceropsilopa lactitella** new species
   Shining black species, wings immaculate..**Ceropsilopa opulens** Cresson
9. Wings with a distinct fuscous spot at apex of vein III **Rhynchopsilopa apicalis** Collin
   Wings immaculate..........**Rhynchopsilopa laevigata** new species

Tribe Discomyzini

1942. Discomyzini Cresson, Trans. Amer. Ent. Soc., LXVIII, p. 104.

DISCOMYZA

1830. *Discomyza* Meigen, Syst. Beschr. Europ. Zweifl. Ins., VI, p. 176.

Discomyza africana Cresson

1939. *Discomyza africana* Cresson, Notulae Nat., Phila., No. 21, p. 5. [Cape Province.]

The wings are infuscated, in design similar to the Oriental *D. maculipennis* (Wiedemann), but has the fore metatarsi pale; mesonotum and mesopleura without cinereous markings.

Discomyza maculipennis (Wiedemann)

1824. *Notiphila maculipennis* Wiedemann, Anal. Entom., p. 57. ["Inde Orient."]

1908. *Discomyza maculipennis* Meijere, Tijds. v. Entom., LI, p. 166.

1926. *Discomyza maculipennis* Bezzi and Lamb, Trans. Ent. Soc. London, 1925, p. 562. [Rodriguez Islands.]

Very similar to *D. africana* but differing as noted in the following key. It is included in the present paper on the record of Bezzi, 1926.

Discomyza eritrea Cresson

1925. *Discomyza incurva* Cresson in part, Trans. Amer. Ent. Soc., LI, p. 242. [Abyssinia.]

1935. *Discomyza eritrea* Cresson, Notulae Nat., Phila., No. 21, p. 3. [Anglo Egyptian Sudan.] [9]

GOLD COAST: (O. R. Gould), [I.I.E., 1].

This species differs from *D. incurva* in being more slender; antenna III more elongate; scutellum narrower, with apicals set closer together; medifacies more coarsely sculptured; costa II longer and posterior cross vein more oblique.

Discomyza dolichoceres Cresson

1944. *Discomyza dolichoceros* Cresson, Notulae Nat., Phila., No. 135, p. 5. [Kenya.]

The long slender spineless antennae suggest some species of the genus *Ceropsilopa*. Whether it belongs to *Discomyza* may be questioned.

Discomyza similis Lamb

1912. *Discomyza similis* Lamb, Trans. Linn. Soc. London, Zool., xv, p. 320. [Seychelles Islands.]

1939. *Discomyza similis* Cresson, Notulae Nat., Phila., No. 21, p. 4.

This species is unknown to me.

Key to the Ethiopian Species of Discomyza

1. Antennae long and slender, about as long as the face, with no pronounced spine on II; wings with discal and apical infuscation **dolichoceros** Cresson
   Antenna normal, short, *Psilopa*-like 2
2. Wings immaculate, at most with costal infuscation... **eritrea** Cresson
   Wings with discal, apical and costal infuscation 3
3. Mesonotum and pleura with cinerous design **maculipennis** (Wiedemann)
   Mesonotum and pleura without cinereous design.... **africana** Cresson

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[9] The type locality, Port Sudan, should have been given: Red Sea District, not Kassala District.

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